



Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION

*PART IV
(1899-1910)*

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START

183

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**West Orange Laboratory Records
Experimental Expense Ledger (1912-1916)**

This subsidiary ledger covers the period March 1908-July 1916, although most of the entries are from 1912-1916. It consists of accounts, arranged alphabetically, for various experiments at the laboratory, along with accounts for Glenmont. Entries for experimental expense accounts include the project numbers assigned in laboratory record books N-01-03-15 and N-10-07-26. The totals for these accounts were posted monthly to General Ledger #9 under the heading, "Experimental Accounts." There is an alphabetical index, which also includes the account numbers in Experimental Expense Ledger (1908-1912). The front cover is stamped "Experiment Ledger No. 9 Thomas A. Edison." A tag attached to the spine is inscribed "Experiment Ledger #9 Thos A. Edison from 1908/1916." The pages are unnumbered. Approximately 600 pages have been used.

attachment for microscope - Alterations, Math & Supplies 22. Alter Patterns #492
 to Crystallog. Chemicals - License History #2520 Alter Patterns #2520
 in the Magnetic Field #1940 Armature shafts #2520 Alter Patterns #2520
 Analyzing Florida Plants - altitudes Room 14-15-16 #2520 Alter Patterns #2520
 for publishing purposes 187 altitudes Chem Lab #2520 Alter Patterns #2520
 Analysis of Carbon 3 ash (6) #2520 Alter Patterns #2520
 Storage Battery by 3 ash (6) #2520 Alter Patterns #2520
 Dr. Broth's #1814 annealing Pits #2520 Alter Patterns #2520
 aluminum Electrolysis 4 auto lighting etc #2520 Alter Patterns #2520
 Rectifier #1814 Ambrak Rectifier Plant #2520 Alter Patterns #2520
 Apparatus for 5 alliums #6 2 m 104 (list of samples) #2520 Alter Patterns #2520
 Treating Wax #2003 alterations Third Blvd #2520 Alter Patterns #2520
 Aiken C. R. 50-15 analysis #2520 Alter Patterns #2520
 Altering Record #2003 analytical work #2520 Alter Patterns #2520
 Shaping Machine 6 automatic Regulator #2520 Alter Patterns #2520
 Aylsworth J. W. 50-19 accessories #2520 Alter Patterns #2520
 Alongwith A. W. 51 analysis #2520 Alter Patterns #2520
 Adams Express Co 51 acid proof paint #2520 Alter Patterns #2520
 Apparatus for treating 7 Anderson J. R. 105 (list of samples) #2520 Alter Patterns #2520
 density of Waxes 1000 alter Patterns #2520 Alter Patterns #2520
 Archer W. N. Alter Patterns #2520 Alter Patterns #2520
 Labor & Mat'l for 52 Annealing Pits #2520 Alter Patterns #2520
 attaching large clock 8 Anode Bus & Holder #2520 Alter Patterns #2520
 movement to 8 Anode Bus & Holder #2520 Alter Patterns #2520
 Clark Telephone #2072 Annealing Pits #2520 Alter Patterns #2520
 arc tests on Rectifier #2101 Alter Patterns #2520 Alter Patterns #2520
 Analyzing Ore 10 Auto lighting etc #2520 Alter Patterns #2520
 Dr. Broth's 2-15 Annealing Pits #2520 Alter Patterns #2520
 Analysis of 11 Annealing Pits #2520 Alter Patterns #2520
 varying Materials 2-15 Annealing Pits #2520 Alter Patterns #2520
 Attachments to 12 Machine Shop #2520 Alter Patterns #2520
 Kinestoscope 2-15 Annealing Pits #2520 Alter Patterns #2520
 Auto wheels 2-15 Annealing Pits #2520 Alter Patterns #2520
 alternating Currents 104 Automatic Switching #2520 Alter Patterns #2520
 Electric Motor #2173 Machine Shop #2520 Alter Patterns #2520
 attachment to 16 Alter Patterns #2520 Alter Patterns #2520
 Shaw Blank #2196 Alter Patterns #2520 Alter Patterns #2520
 Apparatus for the 17 Alter Patterns #2520 Alter Patterns #2520
 Mfg. of Condensers #2214 Alter Patterns #2520 Alter Patterns #2520
 Ambrak Motors for 18 Alter Patterns #2520 Alter Patterns #2520
 Recording Disc Records 2-19 Alter Patterns #2520 Alter Patterns #2520
 automatic hanging Mod #2520 Alter Patterns #2520 Alter Patterns #2520
 A. H. Cables, Clamps 100 Machine Shop #2520 Alter Patterns #2520
 & shapers 2-34 Alter Patterns #2520 Alter Patterns #2520
 assemble Dry Cell Cases #2520 Alter Patterns #2520 Alter Patterns #2520
 ash - per sketch #2520 Alter Patterns #2520 Alter Patterns #2520
 altitude Modelling Room 2-19 Alter Patterns #2520 Alter Patterns #2520
 alter Patterns #2520 Alter Patterns #2520 Alter Patterns #2520
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Name _____
Address _____

Trillium Plant - Construction & Experiments
910 13870

July 31	Aug 31	Sept 30	Oct 31	Nov 30	Dec 31	1915	1916
11	3250	6777	10250	13750	17250	20750	24250
12	3250	6777	10250	13750	17250	20750	24250
13	3250	6777	10250	13750	17250	20750	24250
14	3250	6777	10250	13750	17250	20750	24250
15	3250	6777	10250	13750	17250	20750	24250
16	3250	6777	10250	13750	17250	20750	24250
17	3250	6777	10250	13750	17250	20750	24250
18	3250	6777	10250	13750	17250	20750	24250
19	3250	6777	10250	13750	17250	20750	24250
20	3250	6777	10250	13750	17250	20750	24250
21	3250	6777	10250	13750	17250	20750	24250
22	3250	6777	10250	13750	17250	20750	24250
23	3250	6777	10250	13750	17250	20750	24250
24	3250	6777	10250	13750	17250	20750	24250
25	3250	6777	10250	13750	17250	20750	24250
26	3250	6777	10250	13750	17250	20750	24250
27	3250	6777	10250	13750	17250	20750	24250
28	3250	6777	10250	13750	17250	20750	24250
29	3250	6777	10250	13750	17250	20750	24250
30	3250	6777	10250	13750	17250	20750	24250
31	3250	6777	10250	13750	17250	20750	24250

Industrial Plant, Construction & Equipments
1980

[illegible]

Analysis of Various Material for E.D.B. # 2131

[illegible]

Sheet No. 11

Name
Address

analysis of Various Materials for E. S. B. Co. 3025

Sheet No. 29

Name
Address

analysis

#3025-

1912	1912	1912	1912
Mar 30 Bortfanning	2958.97	Mar 30 Bortfanning	2958.97
Apr 30 20 Vmcher	127	Apr 30 20 Vmcher	127
May 31 " "	140	May 31 " "	140
June 30 " "	143	June 30 " "	143
July 31 " "	147	July 31 " "	147
Aug 31 " "	129	Aug 31 " "	129
Sept 30 " "	121	Sept 30 " "	121
Oct 31 " "	126	Oct 31 " "	126
Nov 30 " "	121	Nov 30 " "	121
Dec 31 " "	155	Dec 31 " "	155
Jan 31 " "	155	Jan 31 " "	155
Feb 28 " "	126	Feb 28 " "	126
	157.92		157.92

1913	1913	1913	1913
Mar 31 20 Vmcher	129	Mar 31 20 Vmcher	129
Apr 30 " "	129	Apr 30 " "	129
May 31 " "	147	May 31 " "	147
June 30 " "	129	June 30 " "	129
July 31 " "	116	July 31 " "	116
Aug 30 " "	109	Aug 30 " "	109
Oct 31 " "	127	Oct 31 " "	127
Nov 30 " "	121	Nov 30 " "	121
Dec 31 " "	156	Dec 31 " "	156
Jan 31 " "	127	Jan 31 " "	127
Feb 28 " "	134	Feb 28 " "	134
Mar 31 " "	156	Mar 31 " "	156
Apr 30 " "	116	Apr 30 " "	116
May 31 " "	115	May 31 " "	115
June 30 " "	106	June 30 " "	106
July 31 " "	106	July 31 " "	106
Aug 30 " "	90	Aug 30 " "	90
Oct 31 " "	95	Oct 31 " "	95
Nov 30 " "	115	Nov 30 " "	115
Dec 31 " "	109	Dec 31 " "	109
Jan 31 " "	156	Jan 31 " "	156
Feb 28 " "	135	Feb 28 " "	135
Mar 31 " "	137	Mar 31 " "	137
Apr 30 " "	171	Apr 30 " "	171
May 31 " "	126	May 31 " "	126

1912	1912	1912	1912
Mar 31 20 Vmcher	129	Mar 31 20 Vmcher	129
Apr 30 " "	129	Apr 30 " "	129
May 31 " "	121	May 31 " "	121
June 30 " "	129	June 30 " "	129
July 31 " "	121	July 31 " "	121
Aug 30 " "	126	Aug 30 " "	126
Sept 30 " "	121	Sept 30 " "	121
Oct 31 " "	155	Oct 31 " "	155
Nov 30 " "	155	Nov 30 " "	155
Dec 31 " "	126	Dec 31 " "	126
Jan 31 " "	157.92	Jan 31 " "	157.92

1913	1913	1913	1913
Mar 31 20 Vmcher	129	Mar 31 20 Vmcher	129
Apr 30 " "	129	Apr 30 " "	129
May 31 " "	147	May 31 " "	147
June 30 " "	129	June 30 " "	129
July 31 " "	116	July 31 " "	116
Aug 30 " "	109	Aug 30 " "	109
Oct 31 " "	127	Oct 31 " "	127
Nov 30 " "	121	Nov 30 " "	121
Dec 31 " "	156	Dec 31 " "	156
Jan 31 " "	127	Jan 31 " "	127
Feb 28 " "	134	Feb 28 " "	134
Mar 31 " "	156	Mar 31 " "	156
Apr 30 " "	116	Apr 30 " "	116
May 31 " "	115	May 31 " "	115
June 30 " "	106	June 30 " "	106
July 31 " "	106	July 31 " "	106
Aug 30 " "	90	Aug 30 " "	90
Oct 31 " "	95	Oct 31 " "	95
Nov 30 " "	115	Nov 30 " "	115
Dec 31 " "	109	Dec 31 " "	109
Jan 31 " "	156	Jan 31 " "	156
Feb 28 " "	135	Feb 28 " "	135
Mar 31 " "	137	Mar 31 " "	137
Apr 30 " "	171	Apr 30 " "	171
May 31 " "	126	May 31 " "	126

Sheet No..

Name _____

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Labrador's Fork

84125

March	1901	11
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621. 20. 2d Edition of J. N. S. 1119.

334

Name _____
Address _____

Name _____
Address _____

E. L. Aiken Labor & Material from

1908		1907			
april 30 to Voucher	86.	1943	april 30 By R.M. Invoice	119.	145.
May 31 "	"	80.	May 31 "	"	201.
June 30 "	"	71.	June 30 "	"	266.
July 31 "	"	80.	July 31 "	"	377.
Aug. 31 "	"	56.	Aug. 31 "	"	391.
Sept. 30 "	"	76.	Sept. 30 "	"	465.
Oct. 31 "	"	104.	Oct. 31 "	"	549.
Nov. 30 "	"	99.	Nov. 30 "	"	570.
Dec. 31 "	"	99.	Dec. 31 "	"	670.
Jan. 30 "	"	109.	Jan. 30 "	"	717.
Feb. 27 "	"	99.	Feb. 27 "	"	855.
Mar. 31 "	"	91.	Mar. 31 "	"	918.
apl. 30 "	"	104.	apl. 30 "	"	992.
May 31 "	"	111.	May 31 "	"	1057.
June 30 "	"	84.	June 30 "	"	1124.
July 31 "	"	107.	July 31 "	"	1200.
aug. 31 "	"	108.	Aug. 31 "	"	1322.
sept. 30 "	"	113.	Sept. 30 "	"	1405.
Oct. 30 "	"	104.	Oct. 30 "	"	1451.
Nov. 30 "	"	102.	Nov. 30 "	"	1571.
Dec. 31 "	"	133.	Dec. 31 "	"	1669.
Feb. 28 "	"	70.	Feb. 28 "	"	1838.
mar. 31 "	"	103.	Mar. 31 "	"	1932.
apl. 30 "	"	118.	apl. 30 "	"	1995.
May 31 "	"	119.	May 31 "	"	2125.
		2601.			2601.

J. W. Aylerworth Labor & Material for

1908	May 31	To Voucher	50	41	May 31	By B. M. Dorr	200	42
	Aug.	"	56	46	Aug 31	"	390	43
	Sept 30.	"	96	47	Sept 30.	"	469	44
	Oct 31	"	104	50	Oct 31	"	550	45
	Nov 30	"	90	49	Nov 30.	"	569	46
	Dec 27	"	107	52	Dec 27	"	781	47
	111	"	97	53	Dec 27	"	803	48
	May 31	"	54	118	May 31	"	1076	49
	June 30.	"	105	119	June 30.	"	1115	50
	July 31	"	105	118	July 31	"	1201	51
	Aug. 31	"	113	121	Aug 31	"	1323	52
	Sept. 30.	"	104	122	Sept 30.	"	1447	53
	Oct 30.	"	107	123	Oct 30.	"	1451	54
	Nov 30	"	107	124	Nov 30.	"	1579	55
	Dec 31	"	13	1500	Dec 31	"	1670	56
	1910	"	133	1511	1911	"	1796	57
	Jan 31	"	115	276	Feb 28	"	1837	58
	Feb 28	"	70	277	Mar 31	"	2193	59
	Mar 31	"	119	278	June 30.	"	2210	60
	June 30	"	70	279	July 31	"	2354	61
	July 31	"	88	280	Aug 31	"	2509	62
	"	"	67	281				63
	"	"	90	1114				64
	aug. 31	"	77	1153				65
	"	"	78	1155				66
	"	"	100	812				67
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								100

Sheet No. 51

Name
Address

A. W. Almqvist Labor & Mat'l for

1908			1908		
June 30 To Vouchers	79	176	June 30 By L&M Invoy	247	176
July 30 " "	41	1348	July 30 " "	"	3848
" " " "	100	677	" " " "	"	4221
" " " "	113	1822	" " " "	"	4787
Nov 30 " "	102	4787	" " " "	"	4787
Dec 31 " "	112	1632	" " " "	"	4787
Jan 31 " "	116	22	" " " "	"	4787
Feb 29 " "	144	4787	" " " "	"	4787
Mar 30 " "	127	220	" " " "	"	4787
June 29 " "	71	4787	" " " "	"	4787
July 31 " "		1972	" " " "	"	4787
Aug 31 " "	160	3400	" " " "	"	4787
Sept 29 " "	1192	3400	" " " "	"	4787
July 31 " "	132	3400	" " " "	"	4787

Adams Express Co Labor & Mat'l for

1908		25	
Oct 31 To Vouchers	88	155	
" " " "	96	155	
" " " "	100	155	
1913			
Nov 30 To Lumber	120	60	
May 31 " "	120	240	
		240	

Cutter Pattern

#334P

Apr 30 By L&M Invoy 60
May 31 " " " 240

Sheet No.

Name
AddressAutomatic Sewing Machine for M. R. Shaw
#3300

1913		1913		
Nov 30 To Lumber	116	845	Nov 30 By #18 Lumber 2257	1214
Dec 31 "	117	349	Dec 31 " " "	230
" "	117	500	Jan 31 " " "	1527
" "	117	130		
" "	116	350		
1914		3346		
Jan 31 "	127	2081		

Lester & Construction Co L&M

July 29	Lumber	126	1706	July 29	Edson Chas. H. Lumber	1991	1706
Nov 31	"	119	1501	Nov 31	"	1107	1801
Apr 30	"	14	19	Apr 29	"	1112	19

Sheet No.

Name _____

Address

Aniline Plant - Construction & Equipment. #3870

[illegible]

Sheet No. _____

Name _____

Address

Alter Hot Test Table
#3759

Oct 31	Luncher	115	5126	Oct 31, E. S. B. Co. Lunch	9217	5126
Nov 30	"	107	779	Nov 30	"	831
			52			
Alter Tallying 8798						
Dec 31	Luncher	107	638	Dec 31, E. S. B. Co. Lunch	9619	638
Annealing Box 8798						
July 28	Luncher	117	691	July 28, E. S. B. Co. Lunch	9733	691

Sheet No. _____

Name _____

Address _____

Albert Patterson

F. 3024

1916
 Sept 30 Voucher 200 210 Sept 30 E. B. Ben Low 100 210

Amherst Bldg 1023

1916
 Dec 31 Voucher 200 210 Dec 31 E. B. Ben Low 100 210

H. Church 1024

1916
 Jan 31 Voucher 118 220 Jan 31 E. B. Ben Low 100 220

Sheet No. _____

Name _____

Address _____

L. 101

H. 101

1916
 Mar 31 Voucher 118 123 Mar 31 E. B. Ben Low 100 123
 Apr 30 " 118 123 Apr 30 " 118 123

Albert Patterson # 10175

1916
 May 31 Voucher 125 125 May 31 E. B. Ben Low 100 125

Christiana Church 1024

1916
 June 30 Voucher 105 125 June 30 E. B. Ben Low 100 125
 July 31 " 125 125 July 31 " 118 125

Sheet No.

Name

Address

Amide Phenol Plant J. W. Elmore

July 31 Vanhook 70 6251 July 31 61 1113 6250

July 31 Vanhook 125 720 July 31 7202 721 1125 720

Bachman R. A. } Brown, Studio L & M, 104
 Labor & Material for } 1 Briggz L & E L & M 105
 Building 1-set of } Building Mach } 109
 Buick Road Complete } 2 Motor Shop Equip } 3105
 without Jack Shaft-1936 } Dependence Roadstead } 105
 Bradshaw J. H. } Dependence } 3111
 Labor & Material for } 50-6 Steel Gate Equip } 106
 Build 3 sets Rollers } 3 One 1/2 Roller } 105
 for Pocket Tube-Strip 1935 } 105 } 105
 Building Nickel } 4 Build Steel Tank by Secum } 3556
 Plating Apparatus # 1935 } Build 2 Steel Tank by Secum } 3556
 Barnes A. S. } Build 2 Apparatus } 107
 Labor & Material for } 50 off River } 3345
 Buckler W. Jr. } 5 Build 2 Steel Tank by Secum } 3556
 Boring out } 5 Boring Job } 107
 Solid Record } 20-4 Build 2 Steel Tank by Secum } 3556
 Brady P. (L & M) } 51 Beer } 63
 Barber Stanley } 50 off River } 105
 Beach R. H. } 50 off River } 105
 Bergman D. L. M. } 53 Build 2 Steel Tank by Secum } 3556
 Business Phone. } 7 Build 2 Steel Tank by Secum } 3556
 Experiment } 2138 Build 2 Steel Tank by Secum } 3556
 Brass Handles } 8 Bearings to be Lab filled } 3359
 Battery Bores } 215 Strong Arm Wheel for } 109
 Business Phone } 7 Build 2 Steel Tank by Secum } 3556
 New Design } 2167 Build 2 Steel Tank by Secum } 3556
 Business Shaving Mach } 10 Build 2 Steel Tank by Secum } 3556
 New Design } 2170 Build 2 Steel Tank by Secum } 3556
 Banerjee W. H. } 53 Build 2 Steel Tank by Secum } 3556
 L & M } 53 Build 2 Steel Tank by Secum } 3556
 Battery Compartment } 2223 Build 2 Steel Tank by Secum } 3556
 air pump } 100 Motor - Canada } 3357
 Concrete Bridge } 100 Build 2 Steel Tank by Secum } 3556
 in motor } 229 Build 2 Steel Tank by Secum } 3556
 Banding 4 Pieces } 231 Build 2 Steel Tank by Secum } 3556
 Barling } 2374 Build 2 Steel Tank by Secum } 3556
 Barling Beam Appar-2383 } 105
 Blow Wax Chips } 2445 Build 2 Steel Tank by Secum } 3556
 Bird cage sticks } 2421 Build 2 Steel Tank by Secum } 3556
 Building for } 12 Build 2 Steel Tank by Secum } 3556
 Chlorinating Work } 2483
 Building Justice } 2493
 Blacksmith Shop } 2462
 Building Machine } 2481
 Bliss D. M. L & M } 14
 Banerjee } L & M 102
 Brown W. a. L & M } 103
 Boards } 2474
 Bronze Bushings } 2468
 Bushings } 4-2493
 Butlet } 3057

Sheet No. 1

Name
Address

R. A. Bachman Labor & Material for

1908

Mar 31 To Voucher

31	7.00
27	30
64	25
69	4.10
71	1.27
280	1.25
39	1.45
65	6.00
76	45
84	6.20
86	25
54	4.25
62	6.55
80	8.00
81	2.28
55	1.25
77	82
79	1.41
22	6.25
78	1.20
80	3.57
53	7.27
56	3.71
62	41
82	17.60
96	123
78	3.17
96	5.70
99	30
104	58
70	11.85
90	11
99	12.66
109	12.23
91	12.19
43	12.47
52	12.64
77	60
104	25
4	100
74	700
77	25
85	100
45	287
77	172
124	147
110	148
78	148
118	157
63	157
88	157
88	157
59	157
2012	157

1908

Mar 31 By L.M. Invoice

69	7.55
71	7.30
115	4.10
151	4.10
195	4.10
265	4.10
326	4.10
392	4.10
470	4.10
551	4.10
572	4.10
668	4.10
759	4.10
920	4.10
993	4.10
1156	4.10
1574	4.10
1671	4.10
1717	4.10
1923	4.10
1976	4.10
2174	4.10
2211	4.10
2356	4.10
74	4.10
2511	4.10

Sheet No. 1

Name
Address

R. A. Bachman Labor's Mart' for

THE BACHMAN LABOR MARKET CO. MEMPHIS, TENN.

1710	Arch. foundry	183.46	1910	Arch. foundry	183.46
Sept 30	To balance	91	Sept 30	By 27 M. Jan	2673
Oct 31	"	57	Oct 31	"	2805
"	"	58	"	"	2923
"	"	101	"	"	113
Nov 30	"	58	Nov 30	"	2974
"	"	52	"	"	3101
"	"	121	Dec 31	"	3116
"	"	122	Jan 31	"	3276
Dec 31	"	116	Feb 28	"	3258
Jan 31	"	94	Mar 31	"	3771
Feb 28	"	104	May 31	"	4114
Mar 31	"	59	June 30	"	4328
May 31	"	83	Aug 31	"	4618
"	"	151	Sept 30	"	5378
June 30	"	32	Oct 30	"	5760
Aug 31	"	56	Nov 30	"	5822
Sept 30	"	138	Dec 31	"	5782
Oct 31	"	141	Jan 31	"	5770
Nov 30	"	144	Feb 29	"	6119
Dec 30	"	127	Mar 31	"	6263
Jan 30	"	70	Apr 30	"	6299
"	"	138	"	"	"
"	"	142	"	"	"
May 31	"	140	"	"	"
June 30	"	145	"	"	"
July 31	"	142	"	"	"
Sept 30	"	121	"	"	"
Oct 31	"	129	"	"	"
Apr 30	To balance	140	Apr 30	By 27 M. Jan	7237
May 31	"	106	May 31	"	7930
Apr 30	"	116	Apr 30	"	8235
May 31	"	119	May 31	"	11127

Sheet No. 1

Name
AddressStrong's Rec. very blank (Johnston?) L. Mow Commission
1910

1937				1938		
Jan 31	London	25	5739	Mar 31	Inn. Camb. 1938	17753
		40	79			
		98	120			
		123	135 17			
		127	51			
		129	22 79			
		136	27 70			
		138	38 15			
		10	150 00			
		11	100			
		12	113 74			
		70	240			
		70	72623			
		120	571			
		104	65			
		107	371 61			
		108	57 50			
		108	20 11			
		109	— 0 —			
		110	70 400			
		111	11 19 1			
		112	4793 50			
		113	77477			
		114	3080 00			
		115	3843			
		116	211 10			
		120	251671			
		121	107			
		122	126 00			
		123	537 50			
		126	371			
		127	670 25			
		129	20 10			
		131	40 00			
		132	118			
		133	110 10			
		134	2125 00			
		135	407 19			
		137	41 40			
		138	2400			
		139	35450			
		140	26477			
		141	1185			
		142	26400			
		143	12365			
		149	576 13 30			
		3	16 00 10			
		9	193 40			
		10	1500 0			
		11	1370			
		22	1126 1			
		23	3565			
		20	21600			

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____

Benzol Recovery Plant Canada
#3847

1915

July 31	Lumber	144	52.55
May 31	"	150	3.00
"	"	171	15.65
April 30	"	70	5.00
"	"	94	1.00
March 31	"	151	1.00
Feb 28	"	164	1.00
Jan 31	"	64	1.00
Dec 31	"	124	1.00
"	"	113	1.00

This document is a record of the work done in the recovery of benzol from the waste gas of the coke oven. It is not a statement of the value of the work done, but a record of the work done.

Name _____
Address _____

Name
Address

Boeing Sport Cars # 4169

-1916

Apr
May

Voucher

get

92

127
128

22.

CAT

51 Apr	29	PL 6 Inc	C. May	11245
15 May	31	"	"	11246

2584
421

78.

 $\sqrt{1}$

7.30
7.21

100

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Build & Iron Loading Machinery
1935

1935		1935		1935	
May 31 To Lumber	11.4	1699	May 31 To Lumber	11.4	1699
June 30 " "	17.9	37530	June 30 " "	17.9	37530
July 31 " "	14	728	July 31 " "	14	728
" " " "	73	28	Aug 31 " "	73	28
" " " "	179	43709	" " " "	179	43709
Aug 30 " "	71	100	Oct 31 " "	71	100
Sept 30 " "	116	32516	Nov 30 " "	116	32516
" " " "	101	11	Dec 31 " "	101	11
Oct 31 " "	119	71630			
" " " "	35	2692			
" " " "	1711	37			
" " " "	174	1570			
Nov 30 " "	14	93			
Dec 31 " "	14	1434			

1933		1933		1933	
May 31 To Lumber	14	21	May 31 To Lumber	14	21

Sheet No. _____

Name _____

Address _____

Bird Cage Sticks #3428

1919	July 31	To Lumber	127	1919	July 31	By E. D. B. Co. Inv	7764	186
	Aug 31	"	116		Aug 31	"	7879	372

U. S. Rec. L. M.

1919	July 31	To Lumber	116	1919	Aug 31	By L. M. Inv	7939	34
	Aug 30	"	116		Sept 30	"	8836	96
	Sept 30	"	106		Oct 30	"	9025	42
	Oct 30	"	252		Nov 30	"	9951	50
	Nov 31	"	718		Dec 31	"	1241	378
	Dec 31	"	145		Jan 31	"	10896	42
	Jan 31	"	119		Feb 31	"	11188	128

Sheet No. _____

Name _____

Address _____

H. D. Walsh, East Lansing, Michigan 48824

1919	July 31	To Lumber	141	1919	July 31	By L. M. Inv	7939	34
	Aug 31	"	106		Aug 31	"	8836	96

1919	Mar 31	Lumber	171	1919	Mar 31	By E. D. B. Co. Inv	9909	264
------	--------	--------	-----	------	--------	---------------------	------	-----

1919	Apr 30	Lumber	16	1919	Apr 30	By L. M. Inv	9909	420
		"	208			"		

Sheet No. _____

Name
AddressBlades for Steam Lumber
1911

1911	Apr 30	Lumber	750	5761	Apr 30	Edmund S. B. Co. Lumber	9910	5761
	May 31	"	273	1110	May 31	"	10058	1440

Boils made of Machine Steel
1911

1911	Apr 30	Lumber	750	5761	Apr 30	Edmund S. B. Co. Lumber	9910	5761
------	--------	--------	-----	------	--------	-------------------------	------	------

Boils of Light Steel
1911

1911	Apr 30	Lumber	250	5761	Apr 30	Edmund S. B. Co. Lumber	9911	5761
------	--------	--------	-----	------	--------	-------------------------	------	------

Sheet No. _____

Name
AddressBlades for Sulphurating Process
1911

1911	Apr 30	Lumber	251	280	Apr 30	Edmund S. B. Co. Lumber	10147	280
	May 31	"	276	363	May 31	"	10258	363
	Aug 31	"	279	157	Aug 31	"	10358	157

Boiler Steel
1911

1911	July 31	Lumber	251	280	July 31	Edmund S. B. Co. Lumber	10147	280
	Aug 31	"	276	363	Aug 31	"	10258	363
		"	279	157		"		157

Blades for Sulphurating Process
1911

1911	July 31	Lumber	50	5761	July 31	Edmund S. B. Co. Lumber	10140	5761
	Aug 31	"	103	50	Aug 31	"	10210	5761
	Sept 30	"	276	280				
		"	279	157				

Sheet No.

Mama

Address

Boyer

4000

1946

Oct 31	Nov 16	370	127	Edwin Chase Threlkeld, 19077	116730
	37	3167			
	40	152			
	121	120			
	177	22411			
	76	181			
	171	1113			
	187	31			
	212	42723			
	226	12615			
	37	3271			
	29	12615			

1915		Labcock & Macleod Driller		1916	
Oct 25	Consider	177	17799	Typ 27 McE. Chandler Rd 11176	188.51
Nov 3		226	1866		
Dec 31		226	1866		

<i>(B) last year Sulphuration of 1908</i>					
<i>1911</i>	<i>Daily</i>	<i>79.</i>	<i>Vouchers</i>	<i>76</i>	<i>30.00 July 29th 1911</i>
					<i>110.14 30.00</i>

Sheet No. _____

Name _____

Address

Mr. Gaykin

1916	May 31	Vanhook	125	1916	May 31	Mar 1916	11.460
------	--------	---------	-----	------	--------	----------	--------

500 Grass Mountain Page 44 of 174

1916								
May 31	Vanahur	120	191	May 31	ED B.C. Inc	11500		191

Reverence

Sheet No.

Name *David Brock Bearings & Brown Good Casing & Iron Jew*

Address

112-66

July 31 Voucher		7	131	July 31	112-66	31/18
17	17.60					
60	1.22					
96	1.0					
132	1.15					

Balance on *David Brock Bearings & Brown Good Casing & Iron Jew*

July 31 Voucher	132	112-66	31/18
-----------------	-----	--------	-------

P. C. Brown

July 31 Voucher	132	112-66	31/18
-----------------	-----	--------	-------

Changes on 30-16-B	-1-	Clay Modelling	* 23 1/2	Change wheels	* 11
Mona auto #1978-	-1-	Case for B. E. Bell	* 23 1/2	Change wheels	* 27 1/2
Cable equipment #1919-	-2-	Boys & Pot	* 23 1/2	Change wheels	* 27 1/2
Changing London	-3-	Check Pitting	* 23 1/2	Change wheels	* 27 1/2
Electric Torneau	* 1617	Check & Rep. Pitting	* 23 1/2	Change wheels	* 27 1/2
Changes on Ann	-4-	Check & Rep. Pitting	* 23 1/2	Change wheels	* 27 1/2
American Auto	* 1799	Castings (24)	* 10 1/2	Change wheels	* 27 1/2
Combination Outfit #2001-	5-	Castings (4)	* 24 1/2	Change wheels	* 27 1/2
Commercial Lead Alloy #1997-	6-	Castings (8)	* 24 1/2	Change wheels	* 27 1/2
Christensen P.		Castings (2)	* 24 1/2	Change wheels	* 27 1/2
Lab. & Mail for	* 50	Controller Switch	* 24 1/2	Change wheels	* 27 1/2
Copper & Ammonia	7	Check & Rep. 10 Pitting	* 24 1/2	Change wheels	* 27 1/2
from Plots Process	* 2065	Check & Rep. 10 Pitting	* 24 1/2	Change wheels	* 27 1/2
Copper Solvent to	8	Cut out Disk	* 24 1/2	Change wheels	* 27 1/2
Separate Nickel Plate	* 2067	Cement Bag	* 24 1/2	Change wheels	* 27 1/2
Butting sprocket	9	Copper Metal	* 24 1/2	Change wheels	* 27 1/2
for Plots Meter	* 2069	recovery from Wash	* 24 1/2	Change wheels	* 27 1/2
Can't left for shift	10	Covers & Bottoms	* 24 1/2	Change wheels	* 27 1/2
Loading Machine	* 2074	for die	* 24 1/2	Change wheels	* 27 1/2
Changes on 34-	* 11	Calculus for chain	* 27	Change wheels	* 27 1/2
Double Loading Machine	* 2077	Machine	* 27	Change wheels	* 27 1/2
Booring J.		Compression Springs	* 27	Change wheels	* 27 1/2
R. & Mail	50	Brocker-Wheel to 106	* 27	Change wheels	* 27 1/2
Barrel A. H.		Cabinets (2)	* 26 1/2	Change wheels	* 27 1/2
R. & Mail	51	Carlighting Cells	* 26 1/2	Change wheels	* 27 1/2
Blanking cuts	12	Colling	* 26 1/2	Change wheels	* 27 1/2
Room # 3-	* 2122	Castings (4)	* 26 1/2	Change wheels	* 27 1/2
Closing & Machine	13	Castings (8)	* 26 1/2	Change wheels	* 27 1/2
per day	* 2135	Clipping H. B. L. M.	* 26 1/2	Change wheels	* 27 1/2
Clamps for A. & A. B.	14	Castings (6)	* 26 1/2	Change wheels	* 27 1/2
Y. & B. Working Machine	* 2143	Castings	* 26 1/2	Change wheels	* 27 1/2
Changes on 15-	15	Corrugating dies	* 26 1/2	Change wheels	* 27 1/2
Exhaustometer Room	* 2148	Castings	* 26 1/2	Change wheels	* 27 1/2
Chalk Parquet	16	Carroll Arms	* 26 1/2	Change wheels	* 27 1/2
for C. & B. Co.	* 2157	Cherwell auto	* 27 1/2	Change wheels	* 27 1/2
Copper Plating	17	Clamps	* 27 1/2	Change wheels	* 27 1/2
Machine	* 2179	Cells	* 27 1/2	Change wheels	* 27 1/2
Changes on Room 15-	22 1/2	Changing Batteries	* 27 1/2	Change wheels	* 27 1/2
Clarke J. H.		Castings	* 27 1/2	Change wheels	* 27 1/2
L. M.	51	Castings	* 27 1/2	Change wheels	* 27 1/2
Carbolic acid	19	Cement Cabinet	* 27 1/2	Change wheels	* 27 1/2
Melting Apparatus	* 2220	Cropping Machines	* 27 1/2	Change wheels	* 27 1/2
Crane V. S. & L. M.	100	Concave die	* 27 1/2	Change wheels	* 27 1/2
Change Graphite	100	Castings	* 27 1/2	Change wheels	* 27 1/2
Mold for Caves (Nodes)	* 2249	Corroded Products	* 27 1/2	Change wheels	* 27 1/2
Change Pitting	* 100	Clamping Rods	* 27 1/2	Change wheels	* 27 1/2
* 100 B. Y. 1169-B	* 2271	Condemnate Box	* 27 1/2	Change wheels	* 27 1/2
Changes on A. B. Cell	* 2276	of America	* 27 1/2	Change wheels	* 27 1/2
Castings for Plating	23 1/2	Castings (6)	* 27 1/2	Change wheels	* 27 1/2
Compression Springs	* 2303	Optical Glass (12)	* 27 1/2	Change wheels	* 27 1/2
Combination Machine	23 1/2	Cells - Sample	* 27 1/2	Change wheels	* 27 1/2

[illegible]Sheet No. 1

Changes on 30 Ab. P. Mors auto. #1978

1911		1912		1913		1914	
May 31	Butt found to Venetia	28	350.346	206	79	Butt found to Venetia	222
" "	" "	77	3136	" "	"	J. A. Edson	230
" "	" "	115	444.67	" "	"	"	230
" "	" "	116	222.25	" "	"	"	230
" "	" "	117	181.6	" "	"	"	230
June 30	" "	5	30.5	" "	"	"	230
" "	" "	41	2.50	" "	"	"	230
" "	" "	107	2.50	" "	"	"	230
" "	" "	117	167.68	" "	"	"	230
" "	" "	118	20.00	" "	"	"	230
" "	" "	119	3.18	" "	"	"	230
July 31	" "	105	3.18	" "	"	"	230
" "	" "	110	60.25	" "	"	"	230
" "	" "	111	120.45	" "	"	"	230
" "	" "	112	2.00	" "	"	"	230
" "	" "	113	7.00	" "	"	"	230
" "	" "	120	15.00	" "	"	"	230
" "	" "	121	2.50	" "	"	"	230
Sept 30	" "	94	6.50	" "	"	"	230
" "	" "	108	50.14	" "	"	"	230
" "	" "	109	2.50	" "	"	"	230
Oct 31	" "	28	3.00	" "	"	"	230
" "	" "	78	2.30	" "	"	"	230
" "	" "	114	9.50	" "	"	"	230
" "	" "	115	47.68	" "	"	"	230
" "	" "	116	1.50	" "	"	"	230
Nov 30	" "	117	1.50	" "	"	"	230
" "	" "	118	94	" "	"	"	230
" "	" "	119	1.50	" "	"	"	230
Dec 31	" "	120	1.50	" "	"	"	230
" "	" "	121	1.50	" "	"	"	230
" "	" "	102	3.60	" "	"	"	230
" "	" "	106	2.27	" "	"	"	230
" "	" "	138	2.27	" "	"	"	230
Feb 29	" "	54	2.20	" "	"	"	230
" "	" "	144	8.20	" "	"	"	230
" "	" "		436.66	" "	"	"	230
Mar 30	to Venetia	127	17	21	21	21	21
Apr 30	" "	142	28.5	21	21	21	21
May 31	" "	140	1.13	21	21	21	21
June 29	" "	145	1.13	21	21	21	21
July 30	to Venetia		1.13	21	21	21	21
Aug 31	" "	140	1.13	21	21	21	21
Sept 30	" "	140	1.13	21	21	21	21
Oct 31	" "	140	1.13	21	21	21	21
Nov 30	" "	140	1.13	21	21	21	21
Dec 31	" "	140	1.13	21	21	21	21

A
B
C

Sheet No. _____

Name
Address

Changelon 30 S.P. Mass Auto. #1978

Sept 30	1978	137.67	1978	137.67	1978	137.67
"	"	73	137.67	137.67	137.67	137.67
"	"	74	73	73	73	73
"	"	77	73	73	73	73
"	"	80	73	73	73	73
"	"	94	73	73	73	73
Oct 30	"	109	73	73	73	73
"	"	11	73	73	73	73
"	"	35	73	73	73	73
"	"	65	73	73	73	73
"	"	75	73	73	73	73
"	"	84	73	73	73	73
"	"	80	73	73	73	73
"	"	101	73	73	73	73
"	"	127	73	73	73	73
Nov 30	"	47	73	73	73	73
Dec 31	"	47	73	73	73	73
Jan 31	"	8	73	73	73	73
"	"	89	73	73	73	73
"	"	113	73	73	73	73
"	"	125	73	73	73	73
Feb 28	"	127	73	73	73	73
Mar 31	"	134	73	73	73	73
Apr 30	"	106	73	73	73	73
June 30	"	106	73	73	73	73
1975	"	106	73	73	73	73
Jan 31	London	2nd	755	755	755	755
			755	755	755	755

Sheet No. 32

Name
Address

Charging Batteries #2759

1971	1971	1971	1971	1971	1971
Nov 30	1971	1971	1971	1971	1971
Dec 30	1971	1971	1971	1971	1971

1971	1971	1971	1971	1971	1971
Nov 30	1971	1971	1971	1971	1971
Dec 30	1971	1971	1971	1971	1971

Sheet No. _____

Name
Address

Sheet No. _____

Name
Address

Copy of Back Photograph

#21, 152

43

1914

Dec 31 To General Expense 200

1921

Aug 31 Balance of Jan 1 131

Sept 30 To Exp'd B'n. Inv 220

Oct 31 " " 220

Dec 31 " " 1529

1529

Dec 31 To Expense 200

Jan 31 To Exp'd B'n. Inv 260

Feb 28 " " " " 260

Mar 31 " " " " 260

Apr 30 " " " " 260

May 31 " " " " 260

June 30 " " " " 260

July 31 " " " " 260

Aug 31 " " " " 260

Sept 30 " " " " 260

Oct 31 " " " " 260

Nov 30 " " " " 260

Dec 31 " " " " 260

2100

May 31 " " " " 1150

July 31 " " " " 1150

" " " " 1150

" " " " 1150

Sheet No.

Name

Address

Sheet No.

Name

Address

Copy of Cash Photograph
#3153

12.12

1916

Dec 31 To General Ledger Wt.

1916

1546 Aug 30 Balance from photo 119 796

Sept 30 By 97.00 from photo 97.00 150

Oct 31 " " " 92.00 188

Dec 31 " " " 95.30 150

1917

Dec 31 To Expense

1917

1546 Jan 31 By 77.00 from photo 77.00 200

Feb 28 " " " 96.25 100

Apr 30 " " " 96.00 150

May 31 " " " 98.00 250

June 30 " " " 100.00 200

Aug 31 " " " 101.00 200

Sept 30 " " " 102.00 100

Oct 31 " " " 103.00 200

Dec 31 " " " 104.00 80

106.00 150

106.00 250

May 31 " " " 113.00 150

June 31 " " " 112.00 150

112.00 10

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Copy of Cash Photograph 1915-16

1905-1

Dec 31 To General Expense Acc.

15416

Apr 30 Balance forward 121

796

Sept 30 " 9219 150

Oct 31 " 9240 50

Dec 31 " 9531 50

Dec 31 To Expense

15416

Jan 31 Balance forward 911 300

Feb 28 " 926 100

Mar 30 " 9491 100

Apr 30 " 9583 100

May 31 " 9985 250

June 30 " 10026 500

July 31 " 10194 200

Aug 31 " 10204 100

Sept 30 " 10576 200

Oct 31 " 10661 50

Dec 31 " 10667 150

5120

May 31 " 11222 100

July 31 " 11504 100

" " 11623 50

Address

Address

Cover All Work in connection with Recovering Plant, Machinery etc.

Jan 31

Lover her

Feb. 27.

[illegible]

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Barbours New Clark Silver Lake
18891-24
47

1889	1890	1891	1892
Apr. 30	May 31	Apr. 30	May 31
Dr. J. H. Howard	Dr. J. H. Howard	Dr. J. H. Howard	Dr. J. H. Howard
97.	111.00	97.	111.00
98.	111.00	98.	111.00
99.	129.52	99.	129.52
100.	119.60	100.	119.60
101.	77.26	101.	77.26
102.	7.00	102.	7.00
103.	13.07	103.	13.07
104.	63.71	104.	63.71
105.	99.55	105.	99.55
106.	5.75	106.	5.75
107.	124.73	107.	124.73
108.	5.33	108.	5.33
109.	848.17	109.	848.17
110.	137.31	110.	137.31
111.	2370.00	111.	2370.00
112.	1150.00	112.	1150.00
113.	5570.00	113.	5570.00
114.	175.00	114.	175.00
115.	39.62	115.	39.62
116.	22.13	116.	22.13
117.	202.53	117.	202.53
118.	180.08	118.	180.08
119.	183.24	119.	183.24
120.	49.00	120.	49.00
121.	7.00	121.	7.00
122.	314.00	122.	314.00
123.	120.00	123.	120.00
124.	13.70	124.	13.70
125.	392.03	125.	392.03
126.	18.04	126.	18.04
127.	7.24	127.	7.24
128.	38.41	128.	38.41
129.	133.00	129.	133.00
130.	25.40	130.	25.40
131.	36.10	131.	36.10
132.	9.99	132.	9.99
133.	30.00	133.	30.00
134.	185.00	134.	185.00
135.	20.00	135.	20.00
136.	10.00	136.	10.00
137.	10.00	137.	10.00
138.	10.00	138.	10.00
139.	10.00	139.	10.00
140.	10.00	140.	10.00
141.	10.00	141.	10.00
142.	10.00	142.	10.00
143.	10.00	143.	10.00
144.	10.00	144.	10.00
145.	10.00	145.	10.00
146.	10.00	146.	10.00
147.	10.00	147.	10.00
148.	10.00	148.	10.00
149.	10.00	149.	10.00
150.	10.00	150.	10.00
151.	10.00	151.	10.00
152.	10.00	152.	10.00
153.	10.00	153.	10.00
154.	10.00	154.	10.00
155.	10.00	155.	10.00
156.	10.00	156.	10.00
157.	10.00	157.	10.00
158.	10.00	158.	10.00
159.	10.00	159.	10.00
160.	10.00	160.	10.00
161.	10.00	161.	10.00
162.	10.00	162.	10.00
163.	10.00	163.	10.00
164.	10.00	164.	10.00
165.	10.00	165.	10.00
166.	10.00	166.	10.00
167.	10.00	167.	10.00
168.	10.00	168.	10.00
169.	10.00	169.	10.00
170.	10.00	170.	10.00
171.	10.00	171.	10.00
172.	10.00	172.	10.00
173.	10.00	173.	10.00
174.	10.00	174.	10.00
175.	10.00	175.	10.00
176.	10.00	176.	10.00
177.	10.00	177.	10.00
178.	10.00	178.	10.00
179.	10.00	179.	10.00
180.	10.00	180.	10.00
181.	10.00	181.	10.00
182.	10.00	182.	10.00
183.	10.00	183.	10.00
184.	10.00	184.	10.00
185.	10.00	185.	10.00
186.	10.00	186.	10.00
187.	10.00	187.	10.00
188.	10.00	188.	10.00
189.	10.00	189.	10.00
190.	10.00	190.	10.00
191.	10.00	191.	10.00
192.	10.00	192.	10.00
193.	10.00	193.	10.00
194.	10.00	194.	10.00
195.	10.00	195.	10.00
196.	10.00	196.	10.00
197.	10.00	197.	10.00
198.	10.00	198.	10.00
199.	10.00	199.	10.00
200.	10.00	200.	10.00

May 31

Sheet No.

Name

Address

Bartholomew New Clark, Silver Lake
13871

May	31	Brought Forward		May	31	Brought Forward	300
		33	28577.00			33	
		34	60.00			34	
		35	60.00			35	
		36	300.77			36	
		37	97.77			37	
		38	11.60			38	
		39	11.60			39	
		40	257.13			40	
		41	60.00			41	
		42	7.35			42	
		43	30.00			43	
		44	50.00			44	
		45	350.00			45	
		46	31.11			46	
		47	1.00			47	
		48	11.60			48	
		49	10.9			49	
		50	342.15			50	
		51	175.00			51	
		52	5.75			52	
		53	127.11			53	
		54	536.75			54	
		55	70.00			55	
		56	12.17			56	
		57	30.00			57	
		58	55.77			58	
		59	142.00			59	
		60	300.00			60	
		61	300.00			61	
		62	357.77			62	
		63	181.11			63	
		64	130.18			64	
		65	60.00			65	
		66	575.00			66	
		67	50.00			67	
		68	190.00			68	
		69	242.00			69	
		70	75.00			70	
		71	175.00			71	
		72	10.70			72	
		73	236.51			73	
		74	253.51			74	
		75	70.11			75	
		76	103.05			76	
		77	226.05			77	
		78	13.44			78	
		79	7.55			79	
		80	25.43			80	
		81	16.70			81	
		82	16.70			82	
		83	45.45			83	

Sheet No.

Name

Address

Bartholomew New Clark, Silver Lake
13871

May	31	Brought Forward		May	31	Brought Forward	300
		119	23777.77			119	
		120	115.70			120	
		121	212.11			121	
		122	160.10			122	
		123	16.70			123	
		124	175.40			124	
		125	557.75			125	
		126	513.25			126	
		127	101.00			127	
		128	145.00			128	
		129	250.13			129	
		130	8.51			130	
		131	73.95			131	
		132	166.61			132	
		133	325.00			133	
		134	2.31			134	
		135	603.66			135	
		136	2430.75			136	
		137	160.80			137	
		138	467.00			138	
		139	101.00			139	
		140	622.12			140	
		141	163.42			141	
		142	3.00			142	
		143	11.60			143	
		144	7.45			144	
		145	22.57			145	
		146	15.75			146	
		147	15.00			147	
		148	770.03			148	
		149	341.00			149	
		150	89.41			150	
		151	48.00			151	
		152	32.41			152	
		153	30.26			153	
		154	146.11			154	
		155	107.44			155	
		156	11.48			156	
		157	61.35			157	
		158	21.73			158	
		159	161.43			159	
		160	12.20			160	
		161	39.75			161	
		162	91.63			162	
		163	111.27			163	
		164	7.70			164	
		165	146.51			165	
		166	272.28			166	
		167	145.00			167	
		168	6.55			168	
		169	63.80			169	
		170	30.72			170	
		171	40.00			171	
		172	249.91			172	
		173	65.93			173	

June 30

Sheet No.

Name
AddressCar to the New Plant, Silver Lake
1871

June 30 Brought Forward		July 31 Brought Forward	
81	607,351	156	300
82	140	157	874,00
83	40,956	158	55,66
84	15,531	159	2,000
85	661	160	1,079
86	661		
87	10,716		
88	150		
89	13,450		
90	46,91		
91	470		
92	31,83		
93	18,950		
94	104		
95	4060		
96	1,712,00		
97	97,83		
98	7,000		
99	180		
100	17,76		
101	1350		
102	24,57		
103	6000		
104	289		
105	139		
106	285		
107	678		
108	8900		
109	17,7500		
110	19,9		
111	920,81		
112	44606		
113	635,30		
114	10,338		
115	2,325		
116	150,00		
117	180		
118	41,400		
119	30,20		
120	5000		
121	37,60		
122	67,77		
123	102,50		
124	830		
125	317,00		
126	600		
127	7100		
128	41,77		
129	26,61		
130	10,00		
131	32,14		
132	20,53		

July 31

Sheet No.

Name
AddressCar to the New Plant, Silver Lake
1871

July 31 Brought Forward		July 31 Brought Forward	
133	18,950	133	18,950
134	650	134	650
135	20,450	135	20,450
136	30,70	136	30,70
137	27,31	137	27,31
138	71,00	138	71,00
139	20,68	139	20,68
140	405	140	405
141	11,93	141	11,93
142	20,663	142	20,663
143	39,27	143	39,27
144	24,00	144	24,00
145	16,000	145	16,000
146	564	146	564
147	12,160	147	12,160
148	7,000	148	7,000
149	10,000	149	10,000
150	34,20	150	34,20
151	37,50	151	37,50
152	17,009	152	17,009
153	17,320	153	17,320
154	18,950	154	18,950
155	33,40	155	33,40
156	47,000	156	47,000
157	17,941	157	17,941
158	20,450	158	20,450
159	20,200	159	20,200
160	31,200	160	31,200
161	16,416	161	16,416
162	24,30	162	24,30
163	13,230	163	13,230
164	10,427	164	10,427
165	31,817	165	31,817
166	66	166	66
167	20	167	20
168	57,64	168	57,64
169	10,57	169	10,57
170	12,40	170	12,40
171	13,40	171	13,40
172	1,740	172	1,740

Sheet No.

Name
Address

Carbel's New Blank

13871

Left 30 Spring Return	13871 13871	Left 30 Spring Return	13871 13871
5	100	5	100
6	100	6	100
7	100	7	100
8	100	8	100
9	100	9	100
10	100	10	100
11	100	11	100
12	100	12	100
13	100	13	100
14	100	14	100
15	100	15	100
16	100	16	100
17	100	17	100
18	100	18	100
19	100	19	100
20	100	20	100
21	100	21	100
22	100	22	100
23	100	23	100
24	100	24	100
25	100	25	100
26	100	26	100
27	100	27	100
28	100	28	100
29	100	29	100
30	100	30	100
31	100	31	100
32	100	32	100
33	100	33	100
34	100	34	100
35	100	35	100
36	100	36	100
37	100	37	100
38	100	38	100
39	100	39	100
40	100	40	100
41	100	41	100
42	100	42	100
43	100	43	100
44	100	44	100
45	100	45	100
46	100	46	100
47	100	47	100
48	100	48	100
49	100	49	100
50	100	50	100
51	100	51	100
52	100	52	100
53	100	53	100
54	100	54	100
55	100	55	100
56	100	56	100
57	100	57	100
58	100	58	100
59	100	59	100

Sheet No.

Name
Address

Carbel's New Blank

13871

Left 30 Spring Return	13871 13871	Left 30 Spring Return	13871 13871
5	100	5	100
6	100	6	100
7	100	7	100
8	100	8	100
9	100	9	100
10	100	10	100
11	100	11	100
12	100	12	100
13	100	13	100
14	100	14	100
15	100	15	100
16	100	16	100
17	100	17	100
18	100	18	100
19	100	19	100
20	100	20	100
21	100	21	100
22	100	22	100
23	100	23	100
24	100	24	100
25	100	25	100
26	100	26	100
27	100	27	100
28	100	28	100
29	100	29	100
30	100	30	100
31	100	31	100
32	100	32	100
33	100	33	100
34	100	34	100
35	100	35	100
36	100	36	100
37	100	37	100
38	100	38	100
39	100	39	100
40	100	40	100
41	100	41	100
42	100	42	100
43	100	43	100
44	100	44	100
45	100	45	100
46	100	46	100
47	100	47	100
48	100	48	100
49	100	49	100
50	100	50	100
51	100	51	100
52	100	52	100
53	100	53	100
54	100	54	100
55	100	55	100
56	100	56	100
57	100	57	100
58	100	58	100
59	100	59	100

Sheet No.

Name

Address

Carroll Newblank

1871

Oct. 31

Lumber

119	441.36
120	370.51
121	168.53
122	1.09
123	106.00
124	9.73
125	844.94
126	200.14
127	1095.00
128	121.08
129	15.40
130	1.11
131	373.44
132	355.6
133	708.0
134	884.56
135	1.00
136	1.06
137	700.0
138	390.1
139	208.37
140	1600.39
141	178.94
142	111.11
143	370.536
144	330.3
145	100.00
146	200.90
147	2.08
148	20.00
149	20.00
150	20.00
151	20.00
152	20.00
153	20.00
154	20.00
155	20.00
156	20.00
157	20.00
158	20.00
159	20.00
160	20.00
161	20.00
162	20.00
163	20.00
164	20.00
165	20.00
166	20.00
167	20.00
168	20.00
169	20.00
170	20.00
171	20.00
172	20.00
173	20.00
174	20.00

Nov. 30

200.00
100.00
100.00

Sheet No.

Name

Address

Carroll Newblank

1871

Nov. 30

Lumber

175	249.10
176	1.561
177	1.760
178	246.40
179	8.12
180	1.07
181	1.07
182	2.22
183	2.00
184	23.76
185	24.11
186	62.55
187	12.47
188	1.00
189	1.00
190	663.60
191	700.00
192	1.736
193	215.11
194	1.40
195	2.23.09
196	3.970
197	24.00
198	24.11
199	1.00
200	1.00
201	1.00
202	1.00
203	1.00
204	1.00
205	1.00
206	1.00
207	1.00
208	1.00
209	1.00
210	1.00
211	1.00
212	1.00
213	1.00
214	1.00
215	1.00
216	1.00
217	1.00
218	1.00
219	1.00
220	1.00
221	1.00
222	1.00
223	1.00
224	1.00
225	1.00
226	1.00
227	1.00
228	1.00
229	1.00
230	1.00

Dec. 31

Lumber

231	246.40
232	246.40
233	246.40
234	246.40
235	246.40
236	246.40
237	246.40
238	246.40
239	246.40
240	246.40
241	246.40
242	246.40
243	246.40
244	246.40
245	246.40
246	246.40
247	246.40
248	246.40
249	246.40
250	246.40

Sheet No. _____

Name
Address

Sheet No. _____

Name
AddressLotharson on Callinet #200072501
10605

56

1915
Jan 31. Louker 147.1915
Jan 31. Edmund B. Baker 246.

246.

Lotharson on Callinet
1915 #2000725011915
Feb 28. Louker 147.
Mar 31. " 171.1915
Mar 31. Edmund B. Baker 246.

246.

Sheet No. _____

Name _____
Address _____*Barbours Road Plant, Preparing Plant
1916*

July 21	Trunk	147	57.33
Mar 31	"	130	1.87
"	"	171	483.8
Apr 30	"	73	5.77
"	"	94	1.62
May 31	"	181	1.73
June 30	"	164	570
July 31	"	174	1.17
Oct 31	"	174	1.16

Sheet No. _____

Name _____
Address _____*Orange Station, Fla.*

Sept 30	Trunk	500	307	Oct 13	B.B. Bond Inc	1000	307
---------	-------	-----	-----	--------	---------------	------	-----

*Domesticated Sea Trout, East Coast, Bottled
1916*

Mar 31	Trunk	36	423	Mar 31	By B.B. & Co. Inc	9510	4654
"	"	130	176				
"	"	171	483.8				

*Domesticated Sea Trout, Fla.
1916*

Oct 31	Trunk	15	494	Oct 31	Edwin Belmont & Co	1040	1245
"	"	74	431	Nov 30	"	1029	4645
"	"	114	20				
"	"	34	1300				
"	"	174	3546				

Sheet No. _____

Name _____
Address _____L. C. ...
1897

1897		1898	
Oct 1	131	Oct 1	131
31	21	31	21
"	37	"	37
"	77	"	77
"	85	"	85
"	140	"	140
"	171	"	171
"	177	"	177
"	25	"	25
"	46	"	46
"	100	"	100
"	100	"	100
"	100	"	100

21 October 1897

L. C. ...

1897		1898	
Oct 1	120	Oct 1	120
31	21	31	21
"	37	"	37
"	77	"	77
"	85	"	85
"	140	"	140
"	171	"	171
"	177	"	177
"	25	"	25
"	46	"	46
"	100	"	100
"	100	"	100
"	100	"	100

Sheet No. _____

Name _____
Address _____L. C. ...
1897

1897		1898	
Oct 1	131	Oct 1	131
31	21	31	21
"	37	"	37
"	77	"	77
"	85	"	85
"	140	"	140
"	171	"	171
"	177	"	177
"	25	"	25
"	46	"	46
"	100	"	100
"	100	"	100
"	100	"	100

L. C. ...

1897		1898	
Oct 1	120	Oct 1	120
31	21	31	21
"	37	"	37
"	77	"	77
"	85	"	85
"	140	"	140
"	171	"	171
"	177	"	177
"	25	"	25
"	46	"	46
"	100	"	100
"	100	"	100
"	100	"	100

Change Made in Mould Assembly Tables
July 31, 1965 131 131, June 31, 1965 11765 1315

Sheet No. _____

Name _____
Address _____*Carl Jensen and wife, Records in New Sweden*

1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
July 21	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1	Aug 1

Sheet No. _____

Name _____
Address _____*Cabinet Works Furniture Records In New at House*

1911

Mar 31

Voucher

66.

1912

Mar 31

By Mrs. M. Edmundson

1913

"

"

79.

1701

Apr 30

"

1914

"

"

89.

1162

May 31

"

1915

"

"

99.

3161

"

1916

Apr 30

"

106.

4782

"

1917

"

"

57.

360

"

1918

"

"

116.

4844

"

1919

May 31

"

102.

4844

"

1920

"

"

103.

204

"

1921

"

"

115.

2378

"

1922

Conroy's Trunk & Bumpers #3663

1911

May 31

Voucher

68.

1912

May 31

By L. B. L. on Lrr

1913

"

"

115.

205

June 30

"

1914

June 30

"

106.

7351

"

1915

Exchange Gallery #2863 # 3663

1911

June 30

Voucher

106.

1912

June 30

By L. B. L. on Lrr

1913

"

"

510.

5769

"

1914

125				126			
Sheet No. _____		Name _____		Sheet No. _____		Name _____	
Address _____		Carpenter Work on line of Thos Co of the Oranges #3707		Address _____		Carroll - New Plant Silver Lake #3871	
1914				1915			
July 31	Summer	60	42495	Mar 31	Summer	96	393
"	"	65	33620	"	"	130	477
"	"	88	9279	"	"	171	13825
"	"	89	9381	"	"	23	17265
"	"	126	9370	"	"	24	1607
"	"	86	1775	"	"	36	57
"	"	58	1075	"	"	38	2471
"	"	55	1070	"	"	44	3168
"	"	56	1070	"	"	69	1621
"	"	70	1061	"	"	70	1061
"	"	75	1061	"	"	93	80
"	"	28	78	"	"	94	1033
"	"	66	570	"	"	90	19401
"	"	95	5709	"	"	96	15218
"	"	113	75	"	"	47	4
"	"	113	75	"	"	47	4
John Leonardable LFM				Last Log of Sapwood into Laff 1915			
1914				1915			
Apr 31	Summer	154	9581	Mar 31	Summer	171	751
"	"	10170	192	"	"	171	751
"	"	150	1016	"	"	171	751
"	"	131	1026	"	"	171	751
1915				1915			
Feb 28	Summer	146	48001	Mar 31	Summer	171	119
"	"	147	7950	"	"	171	119
"	"	116	7950	"	"	171	119
"	"	171	28644	"	"	171	119
"	"	202	14047	"	"	171	119
"	"	202	14047	"	"	171	119
"	"	48	10107	"	"	171	119
"	"	50	750	"	"	171	119
"	"	293	11644	"	"	171	119
"	"	251	2524	"	"	171	119
"	"	256	750	"	"	171	119

126				127			
Sheet No. _____		Name _____		Sheet No. _____		Name _____	
Address _____		Carpenter Work on line of Thos Co of the Oranges #3707		Address _____		Carroll - New Plant Silver Lake #3871	
1914				1915			
July 31	Summer	60	42495	Mar 31	Summer	96	393
"	"	65	33620	"	"	130	477
"	"	88	9279	"	"	171	13825
"	"	89	9381	"	"	23	17265
"	"	126	9370	"	"	24	1607
"	"	86	1775	"	"	36	57
"	"	58	1075	"	"	38	2471
"	"	55	1070	"	"	44	3168
"	"	56	1070	"	"	69	1621
"	"	70	1061	"	"	70	1061
"	"	75	1061	"	"	93	80
"	"	28	78	"	"	94	1033
"	"	66	570	"	"	90	19401
"	"	95	5709	"	"	96	15218
"	"	113	75	"	"	47	4
"	"	113	75	"	"	47	4
John Leonardable LFM				Last Log of Sapwood into Laff 1915			
1914				1915			
Apr 31	Summer	154	9581	Mar 31	Summer	171	751
"	"	10170	192	"	"	171	751
"	"	150	1016	"	"	171	751
"	"	131	1026	"	"	171	751
1915				1915			
Feb 28	Summer	146	48001	Mar 31	Summer	171	119
"	"	147	7950	"	"	171	119
"	"	116	7950	"	"	171	119
"	"	171	28644	"	"	171	119
"	"	202	14047	"	"	171	119
"	"	202	14047	"	"	171	119
"	"	48	10107	"	"	171	119
"	"	50	750	"	"	171	119
"	"	293	11644	"	"	171	119
"	"	251	2524	"	"	171	119
"	"	256	750	"	"	171	119

Sheet No. _____

Name
Address

Cabinet Models. Parts of 1.3866

[illegible]

Sheet No. _____

Name
Address

Cabinet Celluloid Sipping Room
#3895

¹⁷⁹⁵ Apr 30	Loucheur	1800	Novr	Apr 30	By 116 down back up 99	1801	26 or
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1913

Central Service Corp.
1915

1912	1912	1912	1912	1912
Chr. 3. 28	Chr. 30. 28	Chr. 30. 28	Chr. 30. 28	Chr. 30. 28

1215

Copper Laps

212					277.00	2543.98		
Chl	50	Loucheur	151	510	Chl	50, 27, 14	Edmund	1000
Chl	51	"	51	100	Chl	51	"	10499
								110
								100

1015

Combustion Die for Gas Trap Bottles

¹⁹⁴¹	¹	¹²¹⁵	¹	^{P-5866}
Apr 30	Lumber	1.52	Apr 30	Barnard B Co Lvr
				9948
				3948

but

Cutter Blades

May 31	Border	299	210	May 31	IN E. Inc	Inv	10022	210
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Name _____
Address _____

Centrifugal Pump 18922

June 30	1905	1905	June 30	Edmund Hummel Hotel 1111	1905
1905	1905	1905	1905	1905	1905

June 30	1905	1905	June 30	Edmund Hummel Hotel 1111	1905
1905	1905	1905	1905	1905	1905

July 31	1905	1905	July 31	Edmund Hummel Hotel 1111	1905
Aug 31	1905	1905	Aug 31	Edmund Hummel Hotel 1111	1905
Sept 30	1905	1905	Sept 30	Edmund Hummel Hotel 1111	1905
Oct 31	1905	1905	Oct 31	Edmund Hummel Hotel 1111	1905
Nov 30	1905	1905	Nov 30	Edmund Hummel Hotel 1111	1905

Name _____
Address _____

Loring & Patterson 18952

July 31	1905	1905	July 31	Edmund Hummel Hotel 1111	1905
1905	1905	1905	1905	1905	1905

July 31	1905	1905	July 31	Edmund Hummel Hotel 1111	1905
1905	1905	1905	1905	1905	1905

Aug 31	1905	1905	Aug 31	Edmund Hummel Hotel 1111	1905
Sept 30	1905	1905	Sept 30	Edmund Hummel Hotel 1111	1905
Oct 31	1905	1905	Oct 31	Edmund Hummel Hotel 1111	1905
Nov 30	1905	1905	Nov 30	Edmund Hummel Hotel 1111	1905

Sheet No.

Name
AddressChange Church Stills Into Lumber, Stills
1896

Aug 31	Lumber	141	2351	10335	20325
		241	10104	10417	57214
		15	20471		
		58	23251		
		95	30		
Sept 30		101	3015		
		116	2370		
		124	914		
		124	163		
		137	1108		
		146	1086		
		157	2120		
		176	2653		
		187	2653		
		200	10050		
October 17			10050		

Aug 31	Lumber	105	Aug 31	Change Church Stills Into Lumber, Stills	1091
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Aug 31	Lumber	251	5124	Aug 31	Change Church Stills Into Lumber, Stills	10375	5124
Sept 30	"	124	914	Sept 30	"	10400	17061
	"	185	11	Oct 31	"	10409	30666
	"	200	11101	Nov 30	"	10615	35140
Oct 31	"	18	1970	Dec 31	"	10737	41266
	"	37	157				
	"	50	90				
	"	112	910				
	"	177	27539				
Nov 30	"	37	10000				
	"	50	15				
	"	76	243				
	"	112	36139				
	"	147	2124				
Dec 31	"	245	05				
	"	226	45515				
October 31			56515				

Sheet No.

Name
AddressLeakint. Lumber
1896

Aug 31	Lumber	37	10050	Aug 31	Change Church Stills Into Lumber, Stills	10375	5124
Sept 29	"	37	10050	Sept 29	"	10400	17061

Aug 31	Lumber	122	46	Aug 31	Change Church Stills Into Lumber, Stills	10375	5124
Sept 29	"	145	5400	Sept 29	"	10400	17061
		126	1290				

Aug 31	Lumber	145	210	Aug 31	Change Church Stills Into Lumber, Stills	10375	5124
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Sheet No. _____

Name _____
Address _____Carr. Lower Port Harbor, Callicut
1867

1866	1867	1868	1869	1870
July 31	1866	July 31	1867	1868
1866	1867	1868	1869	1870

1866	1867	1868	1869	1870
July 31	1866	July 31	1867	1868
1866	1867	1868	1869	1870

1866	1867	1868	1869	1870
July 31	1866	July 31	1867	1868
1866	1867	1868	1869	1870

Sheet No. _____

Name _____
Address _____Exp. Medical Menagerie
1867

1866	1867	1868	1869	1870
July 31	1866	July 31	1867	1868
1866	1867	1868	1869	1870

1866	1867	1868	1869	1870
July 31	1866	July 31	1867	1868
1866	1867	1868	1869	1870

1866	1867	1868	1869	1870
July 31	1866	July 31	1867	1868
1866	1867	1868	1869	1870

Sheet No. 1

Name
Address

Drawings for Charges on 45 H.P. Motor No. 1977

FOR BUREAU OF THE ARMY, WASHINGTON, D.C.

1905		1906		1907	
Nov. 10	To Ledger R. 27	10.1.19	Apr. 25	By Snyder & Son. 81	7.16.20
Apr. 30	" Voucher 84	3.4.19	Feb. 29	" J. A. G. 2.50	5.9.18
		<u>13.5.68</u>			<u>13.5.68</u>

Name
Address

Drawing for Model House for World's 1905

1905			
Mar 1	To Ledger 23	235	42452
Mar 31	" Voucher	69	24333
	" "	71	618
Apr 30	" "	84	17727
May 31	" "	81	24446
July	" "	1	235
	" "	33	424
	" "	67	75
	" "	77	30
	" "	78	23025
Aug	" "	16	803
	" "	51	60
	" "	53	23041
	" "	54	26
Sept 30	" "	47	377
	" "	93	30
	" "	94	26540
Oct 31	" "	45	694
	" "	77	635
	" "	96	100
	" "	103	19526
	" "	104	1193
Nov 30	" "	43	272
	" "	84	2
	" "	88	16400
	" "	90	30
Dec 31	" "	48	1172
	" "	92	30
	" "	99	134
	" "	100	18082
Jan 30	" "	50	417
	" "	88	610
	" "	97	50
	" "	109	177
	" "	110	23025
Feb 27	" "	92	10646
	" "	99	20
	" "		61024

Name
Address

*Drawing Experimental Work for House No 2 #2054
by Henry J. Small*

1910			
Nov 30	To Voucher	128	708644
Dec 31	" "	23	719000
	" "	53	32
	" "	114	385
	" "	116	20
	" "	117	14900
Jan 31	" "	71	743817
Feb 28	" "	16	761058
	" "	66	1089
	" "	103	14400
	" "	104	451
Mar 31	" "	116	711501
	" "	117	11814
Apr 30	" "	29	711568
June 30	" "	34	711568
	" "	117	75
	" "	118	167
	" "	120	710217

Sheet No. _____

Name
Address

Sheet No. _____

Name
Address

Diet Record Blank #2888

22

1911		1912		1913		1914		1915		1916		1917		1918		1919		1920		1921		1922		1923		1924		1925		1926		1927		1928		1929		1930		1931		1932		1933		1934		1935		1936		1937		1938		1939		1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100		2101		2102		2103		2104		2105		2106		2107		2108		2109		2110		2111		2112		2113		2114		2115		2116		2117		2118		2119		2120		2121		2122		2123		2124		2125		2126		2127		2128		2129		2130		2131		2132		2133		2134		2135		2136		2137		2138		2139		2140		2141		2142		2143		2144		2145		2146		2147		2148		2149		2150		2151		2152		2153		2154		2155		2156		2157		2158		2159		2160		2161		2162		2163		2164		2165		2166		2167		2168		2169		2170		2171		2172		2173		2174		2175		2176		2177		2178		2179		2180		2181		2182		2183		2184		2185		2186		2187		2188		2189		2190		2191		2192		2193		2194		2195		2196		2197		2198		2199		2200		2201		2202		2203		2204		2205		2206		2207		2208		2209		2210		2211		2212		2213		2214		2215		2216		2217		2218		2219		2220		2221		2222		2223		2224		2225		2226		2227		2228		2229		2230		2231		2232		2233		2234		2235		2236		2237		2238		2239		2240		2241		2242		2243		2244		2245		2246		2247		2248		2249		2250		2251		2252		2253		2254		2255		2256		2257		2258		2259		2260		2261		2262		2263		2264		2265		2266		2267		2268		2269		2270		2271		2272		2273		2274		2275		2276		2277		2278		2279		2280		2281		2282		2283		2284		2285		2286		2287		2288		2289		2290		2291		2292		2293		2294		2295		2296		2297		2298		2299		2300		2301		2302		2303		2304		2305		2306		2307		2308		2309		2310		2311		2312		2313		2314		2315		2316		2317		2318		2319		2320		2321		2322		2323		2324		2325		2326		2327		2328		2329		2330		2331		2332		2333		2334		2335		2336		2337		2338		2339		2340		2341		2342		2343		2344		2345		2346		2347		2348		2349		2350		2351		2352		2353		2354		2355		2356		2357		2358		2359		2360	
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Sheet No.

Name
AddressLive Record Plant
72558

July		August		September	
31	10.16	1	10.16	1	10.16
30	10.16	2	10.16	2	10.16
29	10.16	3	10.16	3	10.16
28	10.16	4	10.16	4	10.16
27	10.16	5	10.16	5	10.16
26	10.16	6	10.16	6	10.16
25	10.16	7	10.16	7	10.16
24	10.16	8	10.16	8	10.16
23	10.16	9	10.16	9	10.16
22	10.16	10	10.16	10	10.16
21	10.16	11	10.16	11	10.16
20	10.16	12	10.16	12	10.16
19	10.16	13	10.16	13	10.16
18	10.16	14	10.16	14	10.16
17	10.16	15	10.16	15	10.16
16	10.16	16	10.16	16	10.16
15	10.16	17	10.16	17	10.16
14	10.16	18	10.16	18	10.16
13	10.16	19	10.16	19	10.16
12	10.16	20	10.16	20	10.16
11	10.16	21	10.16	21	10.16
10	10.16	22	10.16	22	10.16
9	10.16	23	10.16	23	10.16
8	10.16	24	10.16	24	10.16
7	10.16	25	10.16	25	10.16
6	10.16	26	10.16	26	10.16
5	10.16	27	10.16	27	10.16
4	10.16	28	10.16	28	10.16
3	10.16	29	10.16	29	10.16
2	10.16	30	10.16	30	10.16
1	10.16	31	10.16	31	10.16

Sheet No.

Name
AddressLive Record Plant
72558

July		August		September	
31	10.16	1	10.16	1	10.16
30	10.16	2	10.16	2	10.16
29	10.16	3	10.16	3	10.16
28	10.16	4	10.16	4	10.16
27	10.16	5	10.16	5	10.16
26	10.16	6	10.16	6	10.16
25	10.16	7	10.16	7	10.16
24	10.16	8	10.16	8	10.16
23	10.16	9	10.16	9	10.16
22	10.16	10	10.16	10	10.16
21	10.16	11	10.16	11	10.16
20	10.16	12	10.16	12	10.16
19	10.16	13	10.16	13	10.16
18	10.16	14	10.16	14	10.16
17	10.16	15	10.16	15	10.16
16	10.16	16	10.16	16	10.16
15	10.16	17	10.16	17	10.16
14	10.16	18	10.16	18	10.16
13	10.16	19	10.16	19	10.16
12	10.16	20	10.16	20	10.16
11	10.16	21	10.16	21	10.16
10	10.16	22	10.16	22	10.16
9	10.16	23	10.16	23	10.16
8	10.16	24	10.16	24	10.16
7	10.16	25	10.16	25	10.16
6	10.16	26	10.16	26	10.16
5	10.16	27	10.16	27	10.16
4	10.16	28	10.16	28	10.16
3	10.16	29	10.16	29	10.16
2	10.16	30	10.16	30	10.16
1	10.16	31	10.16	31	10.16

Sheet No.

Name

Address

Sine Record Blank

1288

Oct. 21

Number

102

170

104

106

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Nov. 21

Number

176

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Dec. 21

Number

252

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Sheet No.

Name

Address

Sine Record Blank

1288

Jan. 21

Number

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Feb. 21

Number

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This record is to be used for the purpose of recording the results of the tests made on the material under test. It is to be filled out by the operator of the test machine and is to be kept in the file of the test machine.

Mar. 21

Number

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Apr. 21

Number

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May 21

Number

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June 21

Number

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July 21

Number

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Aug. 21

Number

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Name ..
Address ..

Name _____
Address _____

Diary Record

2913

His process larger and small is necessary on sheets used in Freddist devices. It must run with the grain of the paper. Speedy measures! (In this will not be made the best of the paper.)

Sheet No. _____

Name
Address

2913

Oct 31	Number	177	11658	11/2 30	W. G. Shindler Inc	10764	663
Nov 30	"	178	1131	Dec 31	"	10764	11889
"	"	179	1131	Jan 31	Number	177	11889
Dec 31	"	178	1131	"	W. G. Shindler Inc	10764	11889
Jan 31	"	177	11658	Dec 31	Number	177	11889
"	"	1	100	"	W. G. Shindler Inc	10764	11889
"	"	30	39,112	"	"	10764	11889
"	"	39	1188	"	"	10764	11889
"	"	87	1188	"	"	10764	11889
"	"	110	1188	"	"	10764	11889
Feb 29	"	118	1188	"	"	10764	11889
"	"	116	1188	"	"	10764	11889
"	"	117	1188	"	"	10764	11889
"	"	118	1188	"	"	10764	11889
"	"	119	1188	"	"	10764	11889
"	"	120	1188	"	"	10764	11889
"	"	121	1188	"	"	10764	11889
"	"	122	1188	"	"	10764	11889
"	"	123	1188	"	"	10764	11889
"	"	124	1188	"	"	10764	11889
"	"	125	1188	"	"	10764	11889
"	"	126	1188	"	"	10764	11889

Sheet No. _____

Name
AddressDiamond Grinding Machines (Make 12)
2020

52

Dec 31	Number	177	11658	11/2 30	W. G. Shindler Inc	10764	11889
Jan 31	"	178	1131	Dec 31	"	10764	11889
Feb 29	"	179	1131	Jan 31	Number	177	11889
"	"	178	1131	"	W. G. Shindler Inc	10764	11889
"	"	177	11658	Dec 31	Number	177	11889
"	"	1	100	"	W. G. Shindler Inc	10764	11889
"	"	30	39,112	"	"	10764	11889
"	"	39	1188	"	"	10764	11889
"	"	87	1188	"	"	10764	11889
"	"	110	1188	"	"	10764	11889
Feb 29	"	118	1188	"	"	10764	11889
"	"	116	1188	"	"	10764	11889
"	"	117	1188	"	"	10764	11889
"	"	118	1188	"	"	10764	11889
"	"	119	1188	"	"	10764	11889
"	"	120	1188	"	"	10764	11889
"	"	121	1188	"	"	10764	11889
"	"	122	1188	"	"	10764	11889
"	"	123	1188	"	"	10764	11889
"	"	124	1188	"	"	10764	11889
"	"	125	1188	"	"	10764	11889
"	"	126	1188	"	"	10764	11889

Dec 31	Number	177	11658	11/2 30	W. G. Shindler Inc	10764	11889
Jan 31	"	178	1131	Dec 31	"	10764	11889
Feb 29	"	179	1131	Jan 31	Number	177	11889
"	"	178	1131	"	W. G. Shindler Inc	10764	11889
"	"	177	11658	Dec 31	Number	177	11889
"	"	1	100	"	W. G. Shindler Inc	10764	11889
"	"	30	39,112	"	"	10764	11889
"	"	39	1188	"	"	10764	11889
"	"	87	1188	"	"	10764	11889
"	"	110	1188	"	"	10764	11889
Feb 29	"	118	1188	"	"	10764	11889
"	"	116	1188	"	"	10764	11889
"	"	117	1188	"	"	10764	11889
"	"	118	1188	"	"	10764	11889
"	"	119	1188	"	"	10764	11889
"	"	120	1188	"	"	10764	11889
"	"	121	1188	"	"	10764	11889
"	"	122	1188	"	"	10764	11889
"	"	123	1188	"	"	10764	11889
"	"	124	1188	"	"	10764	11889
"	"	125	1188	"	"	10764	11889
"	"	126	1188	"	"	10764	11889

59

Sheet No.

Name

Address

Insurance Specifications for Section of Insurance Policy
 1/10/11

1/10/11
 Apr 30 1911 110 110
 Apr 30 1911 110 110

1911
 C. L. Linn

1911
 Apr 30 1911 110 110

110 110
 110 110

Sheet No.

Name

Address

100 Lines P. W. Sample

1911
 July 31 1911 120 120
 July 31 1911 120 120
 July 31 1911 120 120
 July 31 1911 120 120

Sheet No. _____

Name _____

Address _____

Sheet No. 104

Name _____

Address _____

Discharge July 22 2004

1912	June 29 To voucher	145	1912	June 29 By Ed. W. G. 2nd	627	50
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N. C. Linsand L & M.

1912	July 31 To voucher	142	1912	July 31 By L. M. 2nd	625	77
	Aug 31 " "	129		Aug 31 " " "	641	20
						105

N. H. Dinnwiddie L & M.

1912	June 22 To Linsand	28	1912	June 22 Linsand	627	16
June 31	To Linsand	26	June 31 By L. M. 2nd	704	200	
June 30	" "	112	June 31 " " "	767	82	
	" "	125	June 31 " " "	775	35	
May 31	" "	115	June 31 " " "	785	30	
Feb 30	" "	109	June 31 " " "	785	98	
Dec 31	" "	26	June 31 " " "	785	113	
Apr 30	" "	21				

Name
AddressDesign 7 Model for Wood Storage Battery Division, Little Rock
#31112

1912	Jan 31	To	Banker	95	2750	1913	Jan 31	By	L. B. B. Co. Inc.	27287
	July 28	"	"	1211	21133		July 28	"	"	21122
					51607					51607
	Mar 31	To	Banker	120	12000		Mar 31	By	J. B. B. Co. Inc.	12000

1913	May 31	To	Banker	116	116	1913	May 31	By	L. B. B. Co. Inc.	116
	July 28	"	"	116	116		July 28	"	"	116

1913	June 30	To	Banker	120	266	1913	June 30	By	L. B. B. Co. Inc.	266
------	---------	----	--------	-----	-----	------	---------	----	-------------------	-----

Name
AddressDesign for Standard Type of Battery
#39121

1912	Oct 31	To	Banker	95	5405	1913	Oct 31	By	L. B. B. Co. Inc.	5405
				11	7401				"	7401

1912	Oct 31	To	Banker	115	17116	1913	Oct 31	By	L. B. B. Co. Inc.	17116
	Nov 30	"	"	109	1562		Nov 30	"	"	1562

1912	Nov 30	To	Banker	21	638	1913	Nov 30	By	L. B. B. Co. Inc.	638
				109	577				"	577

Sheet No. _____

Name _____
Address _____Drainage System at Silver Lake
#3970

1914		1915	
Mar 31	Lumber	109	1186
Apr 30	"	154	5895
May 31	"	204	5810
Mar 31	By E. B. Co. Lumber	988	4856
Apr 30	" " "	969	5895
May 31	" " "	993	5810

Shipping Solution #3970

1915		1916	
Feb 28	Lumber	187	501
Mar 31	"	171	450
May 31	"	293	999
Feb 28	By E. B. Co. Lumber	978	501
Mar 31	" " "	960	450
May 31	" " "	1013	999

Silver Lake #3980

1915		1916	
Mar 31	Lumber	36	465
Apr 30	"	171	7420
Mar 31	By E. B. Co. Lumber	987	7425

Sheet No. _____

Name _____
Address _____

Silver Lake #3818

1915		1916	
Mar 31	Lumber	171	2617
Apr 30	"	171	2617
May 31	"	232	2617
Mar 31	By E. B. Co. Lumber	986	2617

Silver Lake #3822

1915		1916	
Mar 31	Lumber	171	3767
Apr 30	"	171	392
May 31	"	232	1807
Mar 31	By E. B. Co. Lumber	988	3767
Apr 30	" " "	993	2199
May 31	" " "	1009	2199

Silver Lake #3853

1915		1916	
Mar 31	Lumber	171	2617
Apr 30	"	171	384
May 31	"	232	1807
Mar 31	By E. B. Co. Lumber	988	2617
Apr 30	" " "	993	1916
May 31	" " "	1009	2065

Sheet No. _____

Name
Address

Lieb #3955

1905	May 31	Banker	171	7191	May 31	By E.B. Co. Inc. 9997	7191
	Apr 30	"	87	394	Apr 30	"	9997
			252	603			

1905	Apr 30	Banker	24	708	Apr 30	By E.B. Co. Inc. 9991	9000
		"	254	8396			

1905	May 31	Banker	48	208	May 31	E.B. Co. Inc. 10008	11851
		"	293	11640			

Sheet No. _____

Name
Address

Lieb #3916

1905	May 31	Banker	293	637	May 31	E.B. Co. Inc. 10058	437
	June 30	"	62	366	June 30	"	7775
			111	126	July 31	"	522
			137	627			
			257	6250			
	July 31		256	522			

1905	June 30	Banker	62	356	June 30	By E.B. Co. Inc. 10002	4778
		"	137	626	July 31	"	281
			257	3766			
	July 31		256	281			

1905	July 31	Banker	46	137	July 31	E.B. Co. Inc. 10198	1161
		"	206	10299			

Name _____
Address _____

Dine Diet #3978

Aug 31	Voucher	221	20 Aug 31	Shaw & Sons Holdings	1125	20
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1915
 Oct 31 Voucher 177 215
 Oct 31 Shaw & Sons Holdings 1125 215

1915
 Nov 30 Voucher 158 215
 Nov 30 L & M Inc 1125 215

Name _____
Address _____

Drawing Board #4139

Apr 30	Voucher	151	1916 151 Apr 29	Shaw & Sons Holdings	1125	151
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Shaw & Sons & Shaw & Sons Holdings
 May 31 Voucher 135 2103
 May 31 Shaw & Sons Holdings 1125 2103

Shaw & Sons Voucher 135 2103
 May 31 Voucher 135 2103
 May 31 Shaw & Sons Holdings 1125 2103

Sheet No.

Name

Address

Double Baker Vented Panels
#11, 92

June 30 Yearched	76	70	June 30 1916	76	70	June 30 1916	76	70
July 31	109	109	July 31	109	109	July 31	109	109
	109	109		109	109		109	109

Drawings Con. Runway between Polys
#11, 92

June 30 Yearched	108	108	June 30 1916	108	108	June 30 1916	108	108
July 31	125	125	July 31	125	125	July 31	125	125
	125	125		125	125		125	125

Disc Mould for Paper Rings
#11, 92

June 30 Yearched	108	78	June 30 1916	108	78	June 30 1916	108	78
July 31	125	125	July 31	125	125	July 31	125	125
	125	125		125	125		125	125

Experiment on Colored Photography	1913	Experimental Graphing Machine	2122	Experiments to cheapen	44
Experiments on Electric Motors	2	Experiments on Electric Motors	2122	Experiments to cheapen	44
Universal Telegraphy	1914	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experimental Work on	2	Experiments on Electric Motors	2122	Experiments to cheapen	44
Coloring Cement	1910	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiments on Elements	4	Experiments on Electric Motors	2122	Experiments to cheapen	44
in- and out- of- lamp	1913	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experimental Work on	5	Experiments on Electric Motors	2122	Experiments to cheapen	44
Special Dynamo	1914	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experimental Research on	6	Experiments on Electric Motors	2122	Experiments to cheapen	44
the Edison effect in		Experiments on Electric Motors	2122	Experiments to cheapen	44
vacuum discharge lamps	1913	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiment on Radio	7	Experiments on Electric Motors	2122	Experiments to cheapen	44
activity of Uranium	1914	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiments with Vacuum	8	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiments of Metals	1913	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiments on	9	Experiments on Electric Motors	2122	Experiments to cheapen	44
fluorescent bulbs for		Experiments on Electric Motors	2122	Experiments to cheapen	44
new lamps	1914	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiments on	10	Experiments on Electric Motors	2122	Experiments to cheapen	44
Chalk Reproducer	1917	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiment - Making	11	Experiments on Electric Motors	2122	Experiments to cheapen	44
Substitutes for asphalt	1911	Experiments on Electric Motors	2122	Experiments to cheapen	44
Edison Mas. Thera. W.	12	Experiments on Electric Motors	2122	Experiments to cheapen	44
Lab. a. Material for		Experiments on Electric Motors	2122	Experiments to cheapen	44
Edison Mfg. Co.		Experiments on Electric Motors	2122	Experiments to cheapen	44
Lab. a. Material for		Experiments on Electric Motors	2122	Experiments to cheapen	44
Experimental	13	Experiments on Electric Motors	2122	Experiments to cheapen	44
Battery testing	14	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiments on	15	Experiments on Electric Motors	2122	Experiments to cheapen	44
Reproducer	1917	Experiments on Electric Motors	2122	Experiments to cheapen	44
Edison Storage Battery Co.		Experiments on Electric Motors	2122	Experiments to cheapen	44
Lab. a. Material for		Experiments on Electric Motors	2122	Experiments to cheapen	44
Edison Chemical Works		Experiments on Electric Motors	2122	Experiments to cheapen	44
Lab. a. Material for		Experiments on Electric Motors	2122	Experiments to cheapen	44
Edison Photo. Wkly.		Experiments on Electric Motors	2122	Experiments to cheapen	44
Lab. a. Material for		Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiment on	19	Experiments on Electric Motors	2122	Experiments to cheapen	44
Kinestoscope films	1918	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiments on Amenity	20	Experiments on Electric Motors	2122	Experiments to cheapen	44
for Cuyler Bell	21	Experiments on Electric Motors	2122	Experiments to cheapen	44
Edison Pat. Cement Co.		Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiment on Vacuum	22	Experiments on Electric Motors	2122	Experiments to cheapen	44
Contracting Records	23	Experiments on Electric Motors	2122	Experiments to cheapen	44
by Vacuum Process	24	Experiments on Electric Motors	2122	Experiments to cheapen	44
Experiment on	25	Experiments on Electric Motors	2122	Experiments to cheapen	44
synchroizing arrangement	26	Experiments on Electric Motors	2122	Experiments to cheapen	44
Edison Mas. Machine		Experiments on Electric Motors	2122	Experiments to cheapen	44
L. & M. for	100	Experiments on Electric Motors	2122	Experiments to cheapen	44
Edison W. S.		Experiments on Electric Motors	2122	Experiments to cheapen	44

Sheet No. _____

Name
Address

Nashua, N. H. Edison L.T.M.

Month	Day	Hour	Rate	Amount	Balance
March	30	2 PM	1.00	1.00	1.00
April	30	2 PM	1.00	1.00	1.00
May	31	2 PM	1.00	1.00	1.00
June	30	2 PM	1.00	1.00	1.00
July	31	2 PM	1.00	1.00	1.00
Aug	31	2 PM	1.00	1.00	1.00
Sept	30	2 PM	1.00	1.00	1.00
Oct	31	2 PM	1.00	1.00	1.00
Nov	30	2 PM	1.00	1.00	1.00

Sheet No. _____

Name
Address

Nashua, N. H. Edison L.T.M.

Month	Day	Hour	Rate	Amount	Balance
March	30	2 PM	1.00	1.00	1.00
April	30	2 PM	1.00	1.00	1.00
May	31	2 PM	1.00	1.00	1.00
June	30	2 PM	1.00	1.00	1.00
July	31	2 PM	1.00	1.00	1.00
Aug	31	2 PM	1.00	1.00	1.00
Sept	30	2 PM	1.00	1.00	1.00
Oct	31	2 PM	1.00	1.00	1.00
Nov	30	2 PM	1.00	1.00	1.00

Sheet No. _____

Name _____

Address _____

Sheet No. 14

Name _____

Address _____

Experimental Battery Testing #3018

1911	forward	1912	forward	1913	forward	1914	forward
Sept 30	36	108.96	Sept 30	6460	1959.44	Mar 31	7812
" "	91	700	Oct 31	6602	1959.44	Apr 30	7334
" "	121	107.51	Nov 30	6719	1959.44	May 31	7057
" "	185	117.1	Dec 31	6825	1959.44	June 30	7586
Oct 31	31	41.99			1959.44	July 31	7262
" "	87	73.05			1959.44	Aug 31	7057
" "	97	139			1959.44	Sept 30	7586
" "	101	600			1959.44	Oct 31	7262
" "	119	407.3			1959.44	Nov 30	7057
Nov 30	24	70			1959.44	Dec 31	7586
" "	124	2658			1959.44		
Dec 31	16	384			1959.44		
" "	155	220			1959.44		
		1959.44			1959.44		
1913	1913	1913	1913	1913	1913	1914	1914
Mar 31	120	31.25	Mar 31	7812	31.25	Mar 31	7812
Apr 30	130	130	Apr 30	7334	3420	Apr 30	7334
" "	140	140	May 31	7057	155	May 31	7057
May 31	146	146	June 30	7586	155	June 30	7586
June 30	120	120	July 31	7262	155	July 31	7262
July 31	120	120	Aug 31	7057	155	Aug 31	7057
Aug 31	136	136	Sept 30	7586	155	Sept 30	7586
Sept 30	118	118	Oct 31	7262	155	Oct 31	7262
Oct 31	154	154	Nov 30	7057	155	Nov 30	7057
" "	156	156	Dec 31	7586	155	Dec 31	7586
Jan 31	147	147			155		
" "	146	146			155		
" "	127	127			155		
Feb 28	27	27			155		
" "	28	28			155		
" "	29	29			155		
" "	28	28			155		
" "	76	76			155		
" "	132	132			155		
Mar 31	106	106			155		
Apr 30	116	116			155		
" "	115	115			155		
May 31	106	106			155		
June 30	136	136			155		
July 31	2	2			155		
Aug 30	129	129			155		
" "	90	90			155		
Sept 30	95	95			155		
Oct 31	111	111			155		
" "	111	111			155		
Nov 31	123	123			155		
Dec 30	93	93			155		
" "	115	115			155		
May 31					155		

Name _____
Address _____

Name
Address

Edison storage Battery Co L & M

1912			6455 176	1911			6455 176	
Aug 31	found		179	Aug 31	found		6327	22179
" "	" "	2045	179	" "	" "		6327	22179
" "	" "		179	" "	" "		6470	52735
" "	" "		64	" "	" "		6470	52735
Sept 30		2046	121	Sept 30			6470	52735
" "	" "	2049	121	" "	" "		6470	52735
" "	" "	2049	121	" "	" "		6470	52735
" "	" "	2051	121	" "	" "		6470	52735
" "	" "	2053	121	" "	" "		6470	52735
" "	" "	2056	121	" "	" "		6470	52735
" "	" "	2057	121	" "	" "		6470	52735
" "	" "	2058	121	" "	" "		6470	52735
" "	" "	2059	121	" "	" "		6470	52735
" "	" "	2060	121	" "	" "		6470	52735
" "	" "	2062	121	" "	" "		6470	52735
" "	" "	2063	121	" "	" "		6470	52735
" "	" "	2064	121	" "	" "		6470	52735
" "	" "	2065	121	" "	" "		6470	52735
" "	" "	2066	121	" "	" "		6470	52735
" "	" "	2067	121	" "	" "		6470	52735
" "	" "	2068	121	" "	" "		6470	52735
" "	" "	2069	121	" "	" "		6470	52735
" "	" "	2070	121	" "	" "		6470	52735
" "	" "	2071	121	" "	" "		6470	52735
" "	" "	2072	121	" "	" "		6470	52735
" "	" "	2073	121	" "	" "		6470	52735
" "	" "	2074	121	" "	" "		6470	52735
" "	" "	2075	121	" "	" "		6470	52735
" "	" "	2076	121	" "	" "		6470	52735
" "	" "	2077	121	" "	" "		6470	52735
" "	" "	2078	121	" "	" "		6470	52735
" "	" "	2079	121	" "	" "		6470	52735
" "	" "	2080	121	" "	" "		6470	52735
" "	" "	2081	121	" "	" "		6470	52735
" "	" "	2082	121	" "	" "		6470	52735
" "	" "	2083	121	" "	" "		6470	52735
" "	" "	2084	121	" "	" "		6470	52735
" "	" "	2085	121	" "	" "		6470	52735
" "	" "	2086	121	" "	" "		6470	52735
" "	" "	2087	121	" "	" "		6470	52735
" "	" "	2088	121	" "	" "		6470	52735
" "	" "	2089	121	" "	" "		6470	52735
" "	" "	2090	121	" "	" "		6470	52735
" "	" "	2091	121	" "	" "		6470	52735
" "	" "	2092	121	" "	" "		6470	52735
" "	" "	2093	121	" "	" "		6470	52735
" "	" "	2094	121	" "	" "		6470	52735
" "	" "	2095	121	" "	" "		6470	52735
" "	" "	2096	121	" "	" "		6470	52735
" "	" "	2097	121	" "	" "		6470	52735
" "	" "	2098	121	" "	" "		6470	52735
" "	" "	2099	121	" "	" "		6470	52735
" "	" "	2100	121	" "	" "		6470	52735
" "	" "	2101	121	" "	" "		6470	52735
" "	" "	2102	121	" "	" "		6470	52735
" "	" "	2103	121	" "	" "		6470	52735
" "	" "	2104	121	" "	" "		6470	52735
" "	" "	2105	121	" "	" "		6470	52735
" "	" "	2106	121	" "	" "		6470	52735
" "	" "	2107	121	" "	" "		6470	52735
" "	" "	2108	121	" "	" "		6470	

Name _____
Address _____

Sheet No. 17

Edison Chemical Works Labor & Mat'l for

Name
Address

1910	Best (former)	3328.50	1910	Best (former)	3328.50		
Dec 31	Zornmel	116	Dec 31	Appt. M. Seng	3340		
"	"	117	1911	"	3368		
"	"	116	1911	"	3368		
"	"	117	1911	"	3368		
"	"	116	1911	"	3368		
Jan 31	"	91	1911	"	3368		
"	"	92	1911	"	3368		
"	"	91	1911	"	3368		
"	"	92	1911	"	3368		
"	"	91	1911	"	3368		
"	"	92	1911	"	3368		
Feb 28	"	103	1911	"	3368		
"	"	103	1911	"	3368		
"	"	104	1911	"	3368		
"	"	116	1911	"	3368		
Mar 31	"	117	1911	"	3368		
May 31	"	118	1911	"	3368		
June 30	"	119	1911	"	3368		
Aug 31	"	117	1911	"	3368		
"	Invoice	4667	1911	"	3368		
Sept 30	Vander	110	1911	"	3368		
Oct 31	"	105	1911	"	3368		
"	"	111	1911	"	3368		
Nov 30	"	119	1911	"	3368		
Dec 31	"	122	1911	"	3368		
Jan 29	"	144	1911	"	3368		
Feb 29	"	140	1911	"	3368		
Apr 30	"	142	1911	"	3368		
May 30	"	83	1911	"	3368		
Jan 21	"	102	1911	"	3368		
Oct 30	20 Lumber	101	13/10	Apr 30	Apr 30	7512	13/10
May 30	"	96	1489	May 31	21 M Lumber	7512	7512
June 30	"	80	823	Oct 30	"	7708	234
Oct 31	"	127	20.00	Oct 31	"	7708	234
Dec 31	"	121	126	Dec 31	"	1036	176
Jan 29	"	87	100	Jan 29	"	1183	609
Feb 29	"	176	500	Feb 29	"	1196	1196
Mar 30	"	76	47	Mar 30	"		

Sheet No. _____

Name _____

Address _____

Sheet No. 18

Name _____

Address _____

Edison Phonograph Works Labor material for _____

BY THIS MAIL TO ORDER OF ORDER NO. 1

Mar 31 To Truckee

Apr 30 " " " "

" " " " " "

" " " " " "

May 31 " " " "

June 30 " " " "

July 31 " " " "

Aug 31 " " " "

" " " " " "

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" " " " " "

1908

Mar 31 By R.M. Invoice

Apr 30 " " " "

May 31 " " " "

June 30 " " " "

July 31 " " " "

Aug 31 " " " "

Sept 30 " " " "

Oct 31 " " " "

Nov 30 " " " "

Dec 31 " " " "

Jan 31 " " " "

Feb 27 " " " "

Mar 31 " " " "

Apr 30 " " " "

May 31 " " " "

June 30 " " " "

July 31 " " " "

Aug 31 " " " "

Sept 30 " " " "

Oct 31 " " " "

Nov 30 " " " "

Dec 31 " " " "

Jan 31 " " " "

Feb 27 " " " "

Mar 31 " " " "

Apr 30 " " " "

May 31 " " " "

June 30 " " " "

July 31 " " " "

Aug 31 " " " "

Sept 30 " " " "

Oct 31 " " " "

Nov 30 " " " "

Dec 31 " " " "

Jan 31 " " " "

Feb 27 " " " "

Mar 31 " " " "

Apr 30 " " " "

May 31 " " " "

June 30 " " " "

July 31 " " " "

Aug 31 " " " "

Sept 30 " " " "

Oct 31 " " " "

Nov 30 " " " "

Dec 31 " " " "

Jan 31 " " " "

Feb 27 " " " "

Mar 31 " " " "

Apr 30 " " " "

Sheet No. _____

Name
Address

Sheet No. 22

Name
Address

Edison Portland Cement Co. (Labor Material for)

1908

May 31 To Voucher

80
81
82
June 30
77
79
Sept 30
92
102
104
May 31
Sept 30
50
96
97
98
Oct 31
93
94
101
Nov 30
126
128
129
Dec 31
48
49
Jan 31
179
113
122
90
May 31
79
142
145
77
70
107
97
152
101
91

Mar 31 To Lumber	118
May 31	96
July 31	88
Oct 31	110
Nov 30	100
Dec 31	151
Jan 31	126
Feb 28	127
Feb 28	76
Apr 30	71
May 31	79
June 30	68
June 30	71
July 31	73
Sept 30	89
Sept 30	66

1908

May 31 By L & M Invoice	170
June 30	229
July 31	435
Aug 31	197
Sept 30	2173
Oct 31	2772
Nov 30	2920
Dec 31	2934
Jan 31	3097
Feb 28	3123
Mar 31	3272
Apr 30	3405
May 31	4638
June 30	5086
July 31	5644
Aug 31	5958
Sept 30	6111
Oct 31	6306
Nov 30	6390
Dec 31	6522
Jan 31	6671
Feb 28	6893
Mar 31	7015
Apr 30	7154

Mar 31 By L & M Inv	7293
May 31	7542
July 31	7815
Oct 31	8153
Nov 30	8270
Dec 31	8399
Jan 31	8435
Feb 28	8677
Apr 30	8604
May 31	8723
June 30	8922
July 31	9117
Sept 30	9322

1885
2832
4117
4342
5000
5226
5633
5949
6134
6510
6850
7072
7452
7868
8286
8744
9117
9500
9893
10299

Experimental Book on Musical Synthesizer
#2903

June 30	Brought forward	27	147351	June 30	Brought forward	147351
"	"	71	147351	"	"	147351
"	"	75	147351	"	"	147351
July 31	"	106	147351	July 31	"	147351
"	"	38	147351	"	"	147351
"	"	89	147351	"	"	147351
"	"	112	147351	"	"	147351
"	"	136	147351	"	"	147351
Aug 30	"	79	147351	Aug 30	"	147351
"	"	81	147351	"	"	147351
"	"	89	147351	"	"	147351
"	"	90	147351	"	"	147351
Sept 30	"	21	147351	Sept 30	"	147351
"	"	25	147351	"	"	147351
"	"	28	147351	"	"	147351
"	"	32	147351	"	"	147351
"	"	66	147351	"	"	147351
"	"	81	147351	"	"	147351
Oct 31	"	75	147351	Oct 31	"	147351
"	"	147	147351	"	"	147351
"	"	21	147351	"	"	147351
"	"	27	147351	"	"	147351
"	"	115	147351	"	"	147351
Nov 30	"	14	147351	Nov 30	"	147351
"	"	108	147351	"	"	147351
"	"	108	147351	"	"	147351
"	"	109	147351	"	"	147351
Dec 31	"	36	147351	Dec 31	"	147351
"	"	138	147351	"	"	147351
"	"	150	147351	"	"	147351
1915	"	152	147351	1915	"	147351
Jan 31	"	30	147351	Jan 31	"	147351
"	"	51	147351	"	"	147351
"	"	80	147351	"	"	147351
"	"	102	147351	"	"	147351
"	"	138	147351	"	"	147351
Feb 28	"	147	147351	Feb 28	"	147351
"	"	116	147351	"	"	147351
"	"	114	147351	"	"	147351
Mar 31	"	97	147351	Mar 31	"	147351
"	"	171	147351	"	"	147351
Apr 30	"	22	147351	Apr 30	"	147351
"	"	70	147351	"	"	147351
"	"	87	147351	"	"	147351
"	"	147	147351	"	"	147351
May 31	"	50	147351	May 31	"	147351
"	"	170	147351	"	"	147351
"	"	189	147351	"	"	147351
June 30	"	273	147351	June 30	"	147351
"	"	55	147351	"	"	147351
"	"	63	147351	"	"	147351
"	"	111	147351	"	"	147351
"	"	179	147351	"	"	147351
"	"	281	147351	"	"	147351

Experimental Book on Musical Synthesizer
#2903

July 31	Brought forward	9	147351	July 31	Brought forward	147351
"	"	11	147351	"	"	147351
"	"	12	147351	"	"	147351
"	"	13	147351	"	"	147351
"	"	14	147351	"	"	147351
"	"	15	147351	"	"	147351
"	"	16	147351	"	"	147351
"	"	17	147351	"	"	147351
"	"	18	147351	"	"	147351
"	"	19	147351	"	"	147351
"	"	20	147351	"	"	147351
"	"	21	147351	"	"	147351
"	"	22	147351	"	"	147351
"	"	23	147351	"	"	147351
"	"	24	147351	"	"	147351
"	"	25	147351	"	"	147351
"	"	26	147351	"	"	147351
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"	"	168	147351	"	"	147351
"	"	169	147351	"	"	147351
"	"	170	147351	"		

Sheet No.

Name

Address

Sheet No. 41

Name

Address

Thomas A. Edison Inc. L^{td}

1911				1911				1911			
Mar 31	To Voucher	67	73.45	Mar 31	By T. A. Edison Inc.	3730	77.09				
Apr 30	" "	116	72.69	Apr 30	" "	5712	14.57				
May 31	" "	115	73.69	May 31	" "	4111	3.82				
June 30	" "	117	81.77	June 30	" "	4299	1.88				
July 31	" "	118	120.00	July 31	" "	4432	1.86				
Aug 31	" "	112	146.40	Aug 31	" "	4576	1.25				
Sept 30	" "	119	206.00	Sept 30	" "	4726	1.25				
Oct 31	" "	120	71.00	Oct 31	" "	4879	1.25				
Nov 30	" "	122	19.00	Nov 30	" "	5027	1.25				
Dec 31	" "	110	19.44	Dec 31	" "	5172	1.25				
Jan 31	" "	115	69.30	Jan 31	" "	5316	1.25				
Feb 29	" "	117	17.75	Feb 29	" "	5460	1.25				
Mar 31	" "	118	85.50	Mar 31	" "	5591	1.25				
Apr 30	" "	119	2.40	Apr 30	" "	5744	1.25				
May 31	" "	120	50.00	May 31	" "	5737	1.25				
June 30	" "	121	50.00	June 30	" "	5874	1.25				
July 31	" "	122	50.00	July 31	" "	6025	1.25				
Aug 31	" "	123	50.00	Aug 31	" "	6171	1.25				
Sept 30	" "	124	50.00	Sept 30	" "	6320	1.25				
Oct 31	" "	125	50.00	Oct 31	" "	6468	1.25				
Nov 30	" "	126	50.00	Nov 30	" "	6600	1.25				
Dec 31	" "	127	50.00	Dec 31	" "	6746	1.25				
Jan 31	" "	128	50.00	Jan 31	" "	6897	1.25				
Feb 29	" "	129	50.00	Feb 29	" "	7043	1.25				
Mar 31	" "	130	50.00	Mar 31	" "	7193	1.25				
Apr 30	" "	131	50.00	Apr 30	" "	7347	1.25				
May 31	" "	132	50.00	May 31	" "	7500	1.25				
June 30	" "	133	50.00	June 30	" "	7652	1.25				
July 31	" "	134	50.00	July 31	" "	7807	1.25				
Aug 31	" "	135	50.00	Aug 31	" "	7961	1.25				
Sept 30	" "	136	50.00	Sept 30	" "	8115	1.25				
Oct 31	" "	137	50.00	Oct 31	" "	8268	1.25				
Nov 30	" "	138	50.00	Nov 30	" "	8421	1.25				
Dec 31	" "	139	50.00	Dec 31	" "	8574	1.25				
Jan 31	" "	140	50.00	Jan 31	" "	8727	1.25				
Feb 29	" "	141	50.00	Feb 29	" "	8880	1.25				
Mar 31	" "	142	50.00	Mar 31	" "	9033	1.25				
Apr 30	" "	143	50.00	Apr 30	" "	9186	1.25				
May 31	" "	144	50.00	May 31	" "	9339	1.25				
June 30	" "	145	50.00	June 30	" "	9492	1.25				
July 31	" "	146	50.00	July 31	" "	9645	1.25				
Aug 31	" "	147	50.00	Aug 31	" "	9798	1.25				
Sept 30	" "	148	50.00	Sept 30	" "	9951	1.25				
Oct 31	" "	149	50.00	Oct 31	" "	10104	1.25				
Nov 30	" "	150	50.00	Nov 30	" "	10257	1.25				
Dec 31	" "	151	50.00	Dec 31	" "	10410	1.25				
Jan 31	" "	152	50.00	Jan 31	" "	10563	1.25				
Feb 29	" "	153	50.00	Feb 29	" "	10716	1.25				
Mar 31	" "	154	50.00	Mar 31	" "	10869	1.25				
Apr 30	" "	155	50.00	Apr 30	" "	11022	1.25				
May 31	" "	156	50.00	May 31	" "	11175	1.25				
June 30	" "	157	50.00	June 30	" "	11328	1.25				
July 31	" "	158	50.00	July 31	" "	11481	1.25				
Aug 31	" "	159	50.00	Aug 31	" "	11634	1.25				
Sept 30	" "	160	50.00	Sept 30	" "	11787	1.25				
Oct 31	" "	161	50.00	Oct 31	" "	11940	1.25				
Nov 30	" "	162	50.00	Nov 30	" "	12093	1.25				
Dec 31	" "	163	50.00	Dec 31	" "	12246	1.25				
Jan 31	" "	164	50.00	Jan 31	" "	12399	1.25				
Feb 29	" "	165	50.00	Feb 29	" "	12552	1.25				
Mar 31	" "	166	50.00	Mar 31	" "	12705	1.25				
Apr 30	" "	167	50.00	Apr 30	" "	12858	1.25				
May 31	" "	168	50.00	May 31	" "	13011	1.25				
June 30	" "	169	50.00	June 30	" "	13164	1.25				
July 31	" "	170	50.00	July 31	" "	13317	1.25				
Aug 31	" "	171	50.00	Aug 31	" "	13470	1.25				
Sept 30	" "	172	50.00	Sept 30	" "	13623	1.25				
Oct 31	" "	173	50.00	Oct 31	" "	13776	1.25				
Nov 30	" "	174	50.00	Nov 30	" "	13929	1.25				
Dec 31	" "	175	50.00	Dec 31	" "	14082	1.25				
Jan 31	" "	176	50.00	Jan 31	" "	14235	1.25				
Feb 29	" "	177	50.00	Feb 29	" "	14388	1.25				
Mar 31	" "	178	50.00	Mar 31	" "	14541	1.25				
Apr 30	" "	179	50.00	Apr 30	" "	14694	1.25				
May 31	" "	180	50.00	May 31	" "	14847	1.25				
June 30	" "	181	50.00	June 30	" "	15000	1.25				
July 31	" "	182	50.00	July 31	" "	15153	1.25				
Aug 31	" "	183	50.00	Aug 31	" "	15306	1.25				
Sept 30	" "	184	50.00	Sept 30	" "	15459	1.25				
Oct 31	" "	185	50.00	Oct 31	" "	15612	1.25				
Nov 30	" "	186	50.00	Nov 30	" "	15765	1.25				
Dec 31	" "	187	50.00	Dec 31	" "	15918	1.25				
Jan 31	" "	188	50.00	Jan 31	" "	16071	1.25				
Feb 29	" "	189	50.00	Feb 29	" "	16224	1.25				
Mar 31	" "	190	50.00	Mar 31	" "	16377	1.25				
Apr 30	" "	191	50.00	Apr 30	" "	16530	1.25				
May 31	" "	192	50.00	May 31	" "	16683	1.25				
June 30	" "	193	50.00	June 30	" "	16836	1.25				
July 31	" "	194	50.00	July 31	" "	16989	1.25				
Aug 31	" "	195	50.00	Aug 31	" "	17142	1.25				
Sept 30	" "	196	50.00	Sept 30	" "	17295	1.25				
Oct 31	" "	197	50.00	Oct 31	" "	17448	1.25				
Nov 30	" "	198	50.00	Nov 30	" "	17601	1.25				
Dec 31	" "	199	50.00	Dec 31	" "	17754	1.25				
Jan 31	" "	200	50.00	Jan 31	" "	17907	1.25				
Feb 29	" "	201	50.00	Feb 29	" "	18060	1.25				
Mar 31	" "	202	50.00	Mar 31	" "	18213	1.25				
Apr 30	" "	203	50.00	Apr 30	" "	18366	1.25				
May 31	" "	204	50.00	May 31	" "	18519	1.25				
June 30	" "	205	50.00	June 30	" "	18672	1.25				
July 31	" "	206	50.00	July 31	" "	18825	1.25				
Aug 31	" "	207	50.00	Aug 31	" "	18978	1.25				
Sept 30	" "	208	50.00	Sept 30	" "	19131	1.25				
Oct 31	" "	209	50.00	Oct 31	" "	19284	1.25				
Nov 30	" "	210	50.00	Nov 30	" "	19437	1.25				
Dec 31	" "	211	50.00	Dec 31	" "	19590	1.25				
Jan 31	" "	212	50.00	Jan 31	" "	19743	1.25				
Feb 29	" "	213	50.00	Feb 29	" "	19896	1.25				
Mar 31	" "	214	50.00	Mar 31	" "	20049	1.25				
Apr 30	" "	215	50.00	Apr 30	" "	20202	1.25				
May 31	" "	216	50.00	May 31	" "	20355	1.25				
June 30	" "	217	50.00	June 30	" "	20508	1.25				
July 31	" "	218	50.00	July 31	" "	20661	1.25				
Aug 31	" "	219	50.00	Aug 31	" "	20814	1.25				
Sept 30	" "	220	50.00	Sept 30	" "	20967	1.25				
Oct 31	" "	221	50.00	Oct 31	" "	21120	1.25				
Nov 30	" "	222	50.00	Nov 30	" "	21273	1.25				
Dec 31	" "	223	50.00	Dec 31	" "	21426	1.25				
Jan 31	" "	224	50.00	Jan 31	" "	21579	1.25				
Feb 29	" "	225	50.00	Feb 29	" "	21732	1.25				
Mar 31	" "	226	50.00	Mar 31	" "	21885	1.25				
Apr 30	" "	227	50.00	Apr 30	" "	22038	1.25				
May 31	" "	228	50.00	May 31	" "	22191	1.25				
June 30	" "	229	50.00	June 30	" "	22344	1.25				
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Aug 31	" "	231	50.00	Aug 31	" "	22650	1.25				
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Dec 31	" "	235	50.00	Dec 31	" "	23262	1.25				
Jan 31	" "	236	50.00	Jan 31	" "	23415	1.25				
Feb 29	" "	237	50.00	Feb 29	" "	23568	1.25				
Mar 31	" "	238	50.00	Mar 31	" "	23721	1.25				
Apr 30	" "	239	50.00	Apr 30	" "	23874	1.25				
May 31	" "	240	50.00	May 31	" "	24027	1.25				
June 30	" "	241	50.00	June 30	" "	24180	1.25				
July 31	" "	242	50.00	July 31	" "	24333	1.25				
Aug 31	" "	243	50.00	Aug 31	" "	24486	1.25				
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Oct 31	" "	245	50.00	Oct 31	" "	24792	1.25				
Nov 30	" "	246	50.00	Nov 30	" "	24945	1.25				
Dec 31	" "	247	50.00	Dec 31	" "	25098	1.25				
Jan 31	" "	248	50.00	Jan 31	" "	25251	1.25				
Feb 29	" "	249	50.00	Feb 29	" "	25404	1.25				
Mar 31	" "	250	50.00	Mar 31	" "	25557	1.25				
Apr 30	" "	251	50.00	Apr 30	" "	25710	1.25				
May 31	" "	252	50.00	May 31	" "	25863	1.25				
June 30	" "	253	50.00	June 30	" "	26016	1.25				
July 31	" "	254	50.00	July 31	" "	26169	1.25				
Aug 31	" "	255	50.00	Aug 31	" "	26322	1.25				
Sept 30	" "	256	50.00	Sept 30	" "	26475	1.25				
Oct 31	" "	257	50.00	Oct 31	" "	26628	1.25				
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Dec 31	" "	259	50.00	Dec 31	" "	26934	1.25				
Jan 31	" "	260	50.00	Jan 31	" "	27087	1.25				
Feb 29	" "	261	50.00	Feb 29	" "	27240	1.25				
Mar 31	" "	262	50.00	Mar 31	" "	27393	1.25				
Apr 30	" "	263	50.00	Apr 30	" "	27546	1.25				
May 31	" "	264	50.00	May 31	" "	27699	1.25				
June 30	" "	265	50.00	June 30	" "	27852	1.25				
July 31	" "	266	50.00	July 31	" "	28005	1.25				
Aug 31	" "	267	50.00	Aug 31	" "	28158	1.25				
Sept 30	" "	268	50.00	Sept 30	" "	28311	1.25				
Oct 31	" "	269	50.00	Oct 31	" "	28464	1.25				
Nov 30	" "	270	50.00	Nov 30	" "	28617	1.25				
Dec 31	" "	271	50.00	Dec 31	" "	28770	1.25				
Jan 31	" "	272	50.00	Jan 31	" "	28923	1.25				
Feb 29	" "	273	50.00	Feb 29	" "	29076	1.25				
Mar 31	" "	274	50.00	Mar 31	" "	29229	1.25				
Apr 30	" "	275	50.00	Apr 30	" "	29382	1.25				
May 31	" "										

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Experimental Work on Kinetoscope

#2901

1914	1915	1916	1917	1918	1919
May 31	George Hayward	May 31	George Hayward	May 31	George Hayward
101	101	101	101	101	101
102	102	102	102	102	102
103	103	103	103	103	103
104	104	104	104	104	104
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197	197	197	197	197	197
198	198	198	198	198	198
199	199	199	199	199	199
200	200	200	200	200	200

Sheet No. _____

Name _____
Address _____

Experimental Work on Kineticoscope #2901

Date	Time	Value	Date	Time	Value
July 31		147.6	July 31		147.6
Aug 31	12.00	157.2	Aug 31	12.00	157.2
Sept 30		160.0	Sept 30		160.0
Oct 31		165.0	Oct 31		165.0
Nov 30		170.0	Nov 30		170.0
Dec 31		175.0	Dec 31		175.0
Jan 31		180.0	Jan 31		180.0
Feb 29		185.0	Feb 29		185.0
Mar 31		190.0	Mar 31		190.0
Apr 30		195.0	Apr 30		195.0
May 31		200.0	May 31		200.0
June 30		205.0	June 30		205.0
July 31		210.0	July 31		210.0
Aug 31		215.0	Aug 31		215.0
Sept 30		220.0	Sept 30		220.0
Oct 31		225.0	Oct 31		225.0
Nov 30		230.0	Nov 30		230.0
Dec 31		235.0	Dec 31		235.0
Jan 31		240.0	Jan 31		240.0
Feb 29		245.0	Feb 29		245.0
Mar 31		250.0	Mar 31		250.0
Apr 30		255.0	Apr 30		255.0
May 31		260.0	May 31		260.0
June 30		265.0	June 30		265.0
July 31		270.0	July 31		270.0
Aug 31		275.0	Aug 31		275.0
Sept 30		280.0	Sept 30		280.0
Oct 31		285.0	Oct 31		285.0
Nov 30		290.0	Nov 30		290.0
Dec 31		295.0	Dec 31		295.0
Jan 31		300.0	Jan 31		300.0
Feb 29		305.0	Feb 29		305.0
Mar 31		310.0	Mar 31		310.0
Apr 30		315.0	Apr 30		315.0
May 31		320.0	May 31		320.0
June 30		325.0	June 30		325.0
July 31		330.0	July 31		330.0
Aug 31		335.0	Aug 31		335.0
Sept 30		340.0	Sept 30		340.0
Oct 31		345.0	Oct 31		345.0
Nov 30		350.0	Nov 30		350.0
Dec 31		355.0	Dec 31		355.0
Jan 31		360.0	Jan 31		360.0
Feb 29		365.0	Feb 29		365.0
Mar 31		370.0	Mar 31		370.0
Apr 30		375.0	Apr 30		375.0
May 31		380.0	May 31		380.0
June 30		385.0	June 30		385.0
July 31		390.0	July 31		390.0
Aug 31		395.0	Aug 31		395.0
Sept 30		400.0	Sept 30		400.0
Oct 31		405.0	Oct 31		405.0
Nov 30		410.0	Nov 30		410.0
Dec 31		415.0	Dec 31		415.0
Jan 31		420.0	Jan 31		420.0
Feb 29		425.0	Feb 29		425.0
Mar 31		430.0	Mar 31		430.0
Apr 30		435.0	Apr 30		435.0
May 31		440.0	May 31		440.0
June 30		445.0	June 30		445.0
July 31		450.0	July 31		450.0
Aug 31		455.0	Aug 31		455.0
Sept 30		460.0	Sept 30		460.0
Oct 31		465.0	Oct 31		465.0
Nov 30		470.0	Nov 30		470.0
Dec 31		475.0	Dec 31		475.0
Jan 31		480.0	Jan 31		480.0
Feb 29		485.0	Feb 29		485.0
Mar 31		490.0	Mar 31		490.0
Apr 30		495.0	Apr 30		495.0
May 31		500.0	May 31		500.0
June 30		505.0	June 30		505.0
July 31		510.0	July 31		510.0
Aug 31		515.0	Aug 31		515.0
Sept 30		520.0	Sept 30		520.0
Oct 31		525.0	Oct 31		525.0
Nov 30		530.0	Nov 30		530.0
Dec 31		535.0	Dec 31		535.0
Jan 31		540.0	Jan 31		540.0
Feb 29		545.0	Feb 29		545.0
Mar 31		550.0	Mar 31		550.0
Apr 30		555.0	Apr 30		555.0
May 31		560.0	May 31		560.0
June 30		565.0	June 30		565.0
July 31		570.0	July 31		570.0
Aug 31		575.0	Aug 31		575.0
Sept 30		580.0	Sept 30		580.0
Oct 31		585.0	Oct 31		585.0
Nov 30		590.0	Nov 30		590.0
Dec 31		595.0	Dec 31		595.0
Jan 31		600.0	Jan 31		600.0
Feb 29		605.0	Feb 29		605.0
Mar 31		610.0	Mar 31		610.0
Apr 30		615.0	Apr 30		615.0
May 31		620.0	May 31		620.0
June 30		625.0	June 30		625.0
July 31		630.0	July 31		630.0
Aug 31		635.0	Aug 31		635.0
Sept 30		640.0	Sept 30		640.0
Oct 31		645.0	Oct 31		645.0
Nov 30		650.0	Nov 30		650.0
Dec 31		655.0	Dec 31		655.0
Jan 31		660.0	Jan 31		660.0
Feb 29		665.0	Feb 29		665.0
Mar 31		670.0	Mar 31		670.0
Apr 30		675.0	Apr 30		675.0
May 31		680.0	May 31		680.0
June 30		685.0	June 30		685.0
July 31		690.0	July 31		690.0
Aug 31		695.0	Aug 31		695.0
Sept 30		700.0	Sept 30		700.0
Oct 31		705.0	Oct 31		705.0
Nov 30		710.0	Nov 30		710.0
Dec 31		715.0	Dec 31		715.0
Jan 31		720.0	Jan 31		720.0
Feb 29		725.0	Feb 29		725.0
Mar 31		730.0	Mar 31		730.0
Apr 30		735.0	Apr 30		735.0
May 31		740.0	May 31		740.0
June 30		745.0	June 30		745.0
July 31		750.0	July 31		750.0
Aug 31		755.0	Aug 31		755.0
Sept 30		760.0	Sept 30		760.0
Oct 31		765.0	Oct 31		765.0
Nov 30		770.0	Nov 30		770.0
Dec 31		775.0	Dec 31		775.0
Jan 31		780.0	Jan 31		780.0
Feb 29		785.0	Feb 29		785.0
Mar 31		790.0	Mar 31		790.0
Apr 30		795.0	Apr 30		795.0
May 31		800.0	May 31		800.0
June 30		805.0	June 30		805.0
July 31		810.0	July 31		810.0
Aug 31		815.0	Aug 31		815.0
Sept 30		820.0	Sept 30		820.0
Oct 31		825.0	Oct 31		825.0
Nov 30		830.0	Nov 30		830.0
Dec 31		835.0	Dec 31		835.0
Jan 31		840.0	Jan 31		840.0
Feb 29		845.0	Feb 29		845.0
Mar 31		850.0	Mar 31		850.0
Apr 30		855.0	Apr 30		855.0
May 31		860.0	May 31		860.0
June 30		865.0	June 30		865.0
July 31		870.0	July 31		870.0
Aug 31		875.0	Aug 31		875.0
Sept 30		880.0	Sept 30		880.0
Oct 31		885.0	Oct 31		885.0
Nov 30		890.0	Nov 30		890.0
Dec 31		895.0	Dec 31		895.0
Jan 31		900.0	Jan 31		900.0
Feb 29		905.0	Feb 29		905.0
Mar 31		910.0	Mar 31		910.0
Apr 30		915.0	Apr 30		915.0
May 31		920.0	May 31		920.0
June 30		925.0	June 30		925.0
July 31		930.0	July 31		930.0
Aug 31		935.0	Aug 31		935.0
Sept 30		940.0	Sept 30		940.0
Oct 31		945.0	Oct 31		945.0
Nov 30		950.0	Nov 30		950.0
Dec 31		955.0	Dec 31		955.0
Jan 31		960.0	Jan 31		960.0
Feb 29		965.0	Feb 29		965.0
Mar 31		970.0	Mar 31		970.0
Apr 30		975.0	Apr 30		975.0
May 31		980.0	May 31		980.0
June 30		985.0	June 30		985.0
July 31		990.0	July 31		990.0
Aug 31		995.0	Aug 31		995.0
Sept 30		1000.0	Sept 30		1000.0
Oct 31		1005.0	Oct 31		1005.0
Nov 30		1010.0	Nov 30		1010.0
Dec 31		1015.0	Dec 31		1015.0
Jan 31		1020.0	Jan 31		1020.0
Feb 29		1025.0	Feb 29		1025.0
Mar 31		1030.0	Mar 31		1030.0
Apr 30		1035.0	Apr 30		1035.0
May 31		1040.0	May 31		1040.0
June 30		1045.0	June 30		1045.0
July 31		1050.0	July 31		1050.0
Aug 31		1055.0	Aug 31		1055.0
Sept 30		1060.0	Sept 30		1060.0
Oct 31		1065.0	Oct 31		1065.0
Nov 30		1070.0	Nov 30		1070.0
Dec 31		1075.0	Dec 31		1075.0
Jan 31		1080.0	Jan 31		1080.0
Feb 29		1085.0	Feb 29		1085.0
Mar 31		1090.0	Mar 31		1090.0
Apr 30		1095.0	Apr 30		1095.0
May 31		1100.0	May 31		1100.0
June 30		1105.0	June 30		1105.0
July 31		1110.0	July 31		1110.0
Aug 31		1115.0	Aug 31		1115.0
Sept 30		1120.0	Sept 30		1120.0
Oct 31		1125.0	Oct 31		1125.0
Nov 30		1130.0	Nov 30		1130.0
Dec 31		1135.0	Dec 31		1135.0
Jan 31		1140.0	Jan 31		1140.0
Feb 29		1145.0	Feb 29		1145.0
Mar 31		1150.0	Mar 31		1150.0
Apr 30		1155.0	Apr 30		1155.0
May 31		1160.0	May 31		1160.0
June 30		1165.0	June 30		1165.0
July 31		1170.0	July 31		1170.0
Aug 31		1175.0	Aug 31		1175.0
Sept 30		1180.0	Sept 30		1180.0
Oct 31		1185.0	Oct 31		1185.0
Nov 30		1190.0	Nov 30		1190.0
Dec 31		1195.0	Dec 31		1195.0
Jan 31		1200.0	Jan 31		1200.0
Feb 29		1205.0	Feb 29		1205.0
Mar 31		1210.0	Mar 31		1210.0
Apr 30		1215.0	Apr 30		1215.0
May 31		1220.0	May 31		1220.0
June 30		1225.0	June 30		1225.0
July 31		1230.0	July 31		1230.0
Aug 31		1235.0	Aug 31		1235.0
Sept 30		1240.0	Sept 30		1240.0
Oct 31		1245.0	Oct 31		1245.0
Nov 30		1250.0	Nov 30		1250.0
Dec 31		1255.0	Dec 31		1255.0
Jan 31		1260.0	Jan 31		1260.0
Feb 29		1265.0	Feb 29		1265.0
Mar 31		1270.0	Mar 31		1270.0
Apr 30		1275.0	Apr 30		1275.0
May 31		1280.0	May 31		1280.0
June 30		1285.0	June 30		1285.0
July 31		1290.0	July 31		1290.0
Aug 31		1295.0	Aug 31		1295.0
Sept 30		1300.0	Sept 30		1300.0
Oct 31		1305.0	Oct 31		1305.0
Nov					

Sheet No. _____

Name _____
Address _____

Experimental Work on Primary Batteries

72902

1913	72903				
Apr 30	To Lumber	28	1003	Apr 30	By S.B. Smith
"	"	88	320	May 31	" " "
"	"	104	40	May 30	" " "
"	"	140	2300	Oct 31	" " "
May 31	"	9	30	Oct 30	" " "
"	"	11	50	Oct 31	" " "
"	"	137	1404	Nov 30	" " "
"	"	147	1404	Nov 31	" " "
June 30	"	14	1404	Nov 31	" " "
"	"	141	1404	Oct 31	" " "
July 31	"	149	1404	Oct 31	" " "
Aug 30	"	116	2704		
Sept 30	"	109	1071		
Oct 31	"	127	1650		
Nov 30	"	100	5570		
Dec 31	"	127	20		
Jan 30	"	34	1418		
Feb 31	"	115	570		

Sheet No. _____

Name _____
Address _____

Experimental Work on Business Phone

72900

1913	72901				
June 30	Bought Toyward	72	9901	June 30	By M. H. Smith
"	"	96	350	July 31	" " "
"	"	103	350	Oct 30	" " "
"	"	106	350	Oct 31	" " "
July 31	"	3	214	Nov 30	" " "
"	"	35	3677	Dec 31	" " "
"	"	38	3677		
"	"	48	3677		
"	"	91	1370		
"	"	104	400		
"	"	89	870		
"	"	135	38		
Aug 31	"	136	6975		
"	"	2	70		
"	"	13	113		
"	"	17	10		
"	"	38	27		
"	"	50	478		
"	"	51	870		
"	"	56	638		
"	"	68	56		
"	"	79	3079		
"	"	80	1277		
"	"	81	1214		
"	"	89	06		
"	"	90	6181		
Sept 30	"	95	1045		
"	"	62	420		
"	"	66	490		
"	"	92	19		
"	"	95	148		
Oct 31	"	11	38		
"	"	44	3466		
"	"	68	1377		
"	"	78	107		
"	"	78	60		
"	"	100	804		
"	"	106	1170		
"	"	113	2226		
"	"	114	19		
"	"	115	1277		
"	"	67	307		
"	"	109	1080		
Nov 30	"	15	837		
"	"	80	50		
"	"	80	1000		
"	"	126	140		
"	"	129	1284		
"	"	134	2673		
"	"	150	900		
"	"	157	11		
"	"	157	274		
"	"	157	274		

Name
Address

Experimental Work On Business Forms
12900

12900

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	---

Name _____
Address _____

Experimental Work on Business Phon.

#290.0

1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100

Sheet No.

Name
AddressExperimental Work on *Perissoneura*
#2900

1916	28	2.0	Apr 28	E. P. White and	1116	18486
Apr 30	10	11.71	May 31		1136	18535
"	16	18	June 30		1130	18740
"	17	30	July 31		1131	18835
"	28	120				
"	28	693				
May 31	26	185.55				
"	30	1.52				
"	32	1.90				
"	48	4.71				
"	49	379.57				
"	51	758				
"	73	39				
"	92	21.85				
"	120	6.97				
"	128	65				
"	129	785				
"	135	1197.99				
"	88	306				
"	36	2.21				
"	38	176				
"	40	771				
"	41	432.16				
"	42	19				
"	43	1.40				
"	76	1.99				
"	106	2.10				
"	107	08				
"	108	719.15				
"	35	1.15				
"	39	38				
"	40	202.77				
"	41	3.33				
"	43	68				
"	46	75				
"	76	6.00				
"	132	317.87				

June 20

July 31

Sheet No.

Name
AddressExperimental Work on *Lucilia*
#2901

1916	Oct 1	Brought Forward	276.48	Oct 1	Brought Forward	276.48
"	31	2.00	100	"	31	By 40.6 Lucilia 5.00
"	"	2.6	100	"	"	276.48
"	"	5.0	10	"	"	276.48
"	"	10	10	"	"	276.48
"	"	11	11	"	"	276.48
"	"	12	12	"	"	276.48
"	"	13	13	"	"	276.48
"	"	14	14	"	"	276.48
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"	"	17	17	"	"	276.48
"	"	18	18	"	"	276.48
"	"	19	19	"	"	276.48
"	"	20	20	"	"	276.48
"	"	21	21	"	"	276.48
"	"	22	22	"	"	276.48
"	"	23	23	"	"	276.48
"	"	24	24	"	"	276.48
"	"	25	25	"	"	276.48
"	"	26	26	"	"	276.48
"	"	27	27	"	"	276.48
"	"	28	28	"	"	276.48
"	"	29	29	"	"	276.48
"	"	30	30	"	"	276.48
"	"	31	31	"	"	276.48
"	"	32	32	"	"	276.48
"	"	33	33	"	"	276.48
"	"	34	34	"	"	276.48
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"	"	36	36	"	"	276.48
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"	"	84	84	"	"	276.48
"	"	85	85	"	"	276.48
"	"	86	86	"	"	276.48
"	"	87	87	"	"	276.48
"	"	88	88	"	"	276.48
"	"	89	89	"	"	276.48
"	"	90	90	"	"	276.48
"	"	91	91	"	"	276.48
"	"	92	92	"	"	276.48
"	"	93	93	"	"	276.48
"	"	94	94	"	"	276.48
"	"	95	95	"	"	276.48
"	"	96	96	"	"	276.48
"	"	97	97	"	"	276.48
"	"	98	98	"	"	276.48
"	"	99	99	"	"	276.48
"	"	100	100	"	"	276.48

May 31

June 30

July 31

Aug 31

Sept 30

Name
Address

Experimental Work On Silver Thiomers

\$2000

[illegible]

Name _____
Address _____

Experimental Work on Diesel Engine

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1915																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Sheet No.

Name
AddressExperimental Station, New Haven
2-901

1914	1915	1916	1917	1918	1919
July 29	108	125	140	155	170
Aug 29	125	140	155	170	185
Sept 29	140	155	170	185	200
Oct 29	155	170	185	200	215
Nov 29	170	185	200	215	230
Dec 29	185	200	215	230	245
Jan 29	200	215	230	245	260
Feb 29	215	230	245	260	275
Mar 29	230	245	260	275	290
Apr 29	245	260	275	290	305
May 29	260	275	290	305	320
Jun 29	275	290	305	320	335
Jul 29	290	305	320	335	350
Aug 29	305	320	335	350	365
Sept 29	320	335	350	365	380
Oct 29	335	350	365	380	395
Nov 29	350	365	380	395	410
Dec 29	365	380	395	410	425
Jan 30	380	395	410	425	440
Feb 30	395	410	425	440	455
Mar 30	410	425	440	455	470
Apr 30	425	440	455	470	485
May 30	440	455	470	485	500
Jun 30	455	470	485	500	515
Jul 30	470	485	500	515	530
Aug 30	485	500	515	530	545
Sept 30	500	515	530	545	560
Oct 30	515	530	545	560	575
Nov 30	530	545	560	575	590
Dec 30	545	560	575	590	605
Jan 31	560	575	590	605	620
Feb 31	575	590	605	620	635
Mar 31	590	605	620	635	650
Apr 31	605	620	635	650	665
May 31	620	635	650	665	680
Jun 31	635	650	665	680	695
Jul 31	650	665	680	695	710
Aug 31	665	680	695	710	725
Sept 31	680	695	710	725	740
Oct 31	695	710	725	740	755
Nov 31	710	725	740	755	770
Dec 31	725	740	755	770	785
Jan 32	740	755	770	785	800
Feb 32	755	770	785	800	815
Mar 32	770	785	800	815	830
Apr 32	785	800	815	830	845
May 32	800	815	830	845	860
Jun 32	815	830	845	860	875
Jul 32	830	845	860	875	890
Aug 32	845	860	875	890	905
Sept 32	860	875	890	905	920
Oct 32	875	890	905	920	935
Nov 32	890	905	920	935	950
Dec 32	905	920	935	950	965
Jan 33	920	935	950	965	980
Feb 33	935	950	965	980	995
Mar 33	950	965	980	995	1010
Apr 33	965	980	995	1010	1025
May 33	980	995	1010	1025	1040
Jun 33	995	1010	1025	1040	1055
Jul 33	1010	1025	1040	1055	1070
Aug 33	1025	1040	1055	1070	1085
Sept 33	1040	1055	1070	1085	1100
Oct 33	1055	1070	1085	1100	1115
Nov 33	1070	1085	1100	1115	1130
Dec 33	1085	1100	1115	1130	1145
Jan 34	1100	1115	1130	1145	1160
Feb 34	1115	1130	1145	1160	1175
Mar 34	1130	1145	1160	1175	1190
Apr 34	1145	1160	1175	1190	1205
May 34	1160	1175	1190	1205	1220
Jun 34	1175	1190	1205	1220	1235
Jul 34	1190	1205	1220	1235	1250
Aug 34	1205	1220	1235	1250	1265
Sept 34	1220	1235	1250	1265	1280
Oct 34	1235	1250	1265	1280	1295
Nov 34	1250	1265	1280	1295	1310
Dec 34	1265	1280	1295	1310	1325
Jan 35	1280	1295	1310	1325	1340
Feb 35	1295	1310	1325	1340	1355
Mar 35	1310	1325	1340	1355	1370
Apr 35	1325	1340	1355	1370	1385
May 35	1340	1355	1370	1385	1400
Jun 35	1355	1370	1385	1400	1415
Jul 35	1370	1385	1400	1415	1430
Aug 35	1385	1400	1415	1430	1445
Sept 35	1400	1415	1430	1445	1460
Oct 35	1415	1430	1445	1460	1475
Nov 35	1430	1445	1460	1475	1490
Dec 35	1445	1460	1475	1490	1505
Jan 36	1460	1475	1490	1505	1520
Feb 36	1475	1490	1505	1520	1535
Mar 36	1490	1505	1520	1535	1550
Apr 36	1505	1520	1535	1550	1565
May 36	1520	1535	1550	1565	1580
Jun 36	1535	1550	1565	1580	1595
Jul 36	1550	1565	1580	1595	1610
Aug 36	1565	1580	1595	1610	1625
Sept 36	1580	1595	1610	1625	1640
Oct 36	1595	1610	1625	1640	1655
Nov 36	1610	1625	1640	1655	1670
Dec 36	1625	1640	1655	1670	1685
Jan 37	1640	1655	1670	1685	1700
Feb 37	1655	1670	1685	1700	1715
Mar 37	1670	1685	1700	1715	1730
Apr 37	1685	1700	1715	1730	1745
May 37	1700	1715	1730	1745	1760
Jun 37	1715	1730	1745	1760	1775
Jul 37	1730	1745	1760	1775	1790
Aug 37	1745	1760	1775	1790	1805
Sept 37	1760	1775	1790	1805	1820
Oct 37	1775	1790	1805	1820	1835
Nov 37	1790	1805	1820	1835	1850
Dec 37	1805	1820	1835	1850	1865
Jan 38	1820	1835	1850	1865	1880
Feb 38	1835	1850	1865	1880	1895
Mar 38	1850	1865	1880	1895	1910
Apr 38	1865	1880	1895	1910	1925
May 38	1880	1895	1910	1925	1940
Jun 38	1895	1910	1925	1940	1955
Jul 38	1910	1925	1940	1955	1970
Aug 38	1925	1940	1955	1970	1985
Sept 38	1940	1955	1970	1985	2000
Oct 38	1955	1970	1985	2000	2015
Nov 38	1970	1985	2000	2015	2030
Dec 38	1985	2000	2015	2030	2045
Jan 39	2000	2015	2030	2045	2060
Feb 39	2015	2030	2045	2060	2075
Mar 39	2030	2045	2060	2075	2090
Apr 39	2045	2060	2075	2090	2105
May 39	2060	2075	2090	2105	2120
Jun 39	2075	2090	2105	2120	2135
Jul 39	2090	2105	2120	2135	2150
Aug 39	2105	2120	2135	2150	2165
Sept 39	2120	2135	2150	2165	2180
Oct 39	2135	2150	2165	2180	2195
Nov 39	2150	2165	2180	2195	2210
Dec 39	2165	2180	2195	2210	2225
Jan 40	2180	2195	2210	2225	2240
Feb 40	2195	2210	2225	2240	2255
Mar 40	2210	2225	2240	2255	2270
Apr 40	2225	2240	2255	2270	2285
May 40	2240	2255	2270	2285	2300
Jun 40	2255	2270	2285	2300	2315
Jul 40	2270	2285	2300	2315	2330
Aug 40	2285	2300	2315	2330	2345
Sept 40	2300	2315	2330	2345	2360
Oct 40	2315	2330	2345	2360	2375
Nov 40	2330	2345	2360	2375	2390
Dec 40	2345	2360	2375	2390	2405
Jan 41	2360	2375	2390	2405	2420
Feb 41	2375	2390	2405	2420	2435
Mar 41	2390	2405	2420	2435	2450
Apr 41	2405	2420	2435	2450	2465
May 41	2420	2435	2450	2465	2480
Jun 41	2435	2450	2465	2480	2495
Jul 41	2450	2465	2480	2495	2510
Aug 41	2465	2480	2495	2510	2525
Sept 41	2480	2495	2510	2525	2540
Oct 41	2495	2510	2525	2540	2555
Nov 41	2510	2525	2540	2555	2570
Dec 41	2525	2540	2555	2570	2585
Jan 42	2540	2555	2570	2585	2600
Feb 42	2555	2570	2585	2600	2615
Mar 42	2570	2585	2600	2615	2630
Apr 42	2585	2600	2615	2630	2645
May 42	2600	2615	2630	2645	2660
Jun 42	2615	2630	2645	2660	2675
Jul 42	2630	2645	2660	2675	2690
Aug 42	2645	2660	2675	2690	2705
Sept 42	2660	2675	2690	2705	2720
Oct 42	2675	2690	2705	2720	2735
Nov 42	2690	2705	2720	2735	2750
Dec 42	2705	2720	2735	2750	2765
Jan 43	2720	2735	2750	2765	2780
Feb 43	2735	2750	2765	2780	2795
Mar 43	2750	2765	2780	2795	2810
Apr 43	2765	2780	2795	2810	2825
May 43	2780	2795	2810	2825	2840
Jun 43	2795	2810	2825	2840	2855
Jul 43	2810	2825	2840	2855	2870
Aug 43	2825	2840	2855	2870	2885
Sept 43	2840	2855	2870	2885	2900
Oct 43	2855	2870	2885	2900	2915
Nov 43	2870	2885	2900	2915	2930
Dec 43	2885	2900	2915	2930	2945
Jan 44	2900	2915	2930	2945	2960
Feb 44	2915	2930	2945	2960	2975
Mar 44	2930	2945	2960	2975	2990
Apr 44	2945	2960	2975	2990	3005
May 44	2960	2975	2990	3005	3020
Jun 44	2975	2990	3005	3020	3035
Jul 44	2990	3005	3020	3035	3050
Aug 44	3005	3020	3035	3050	3065
Sept 44	3020	3035	3050	3065	3080
Oct 44	3035	3050	3065	3080	3095
Nov 44	3050	3065	3080	3095	3110
Dec 44	3065	3080	3095	3110	3125
Jan 45	3080	3095	3110	3125	3140
Feb 45	3095	3110	3125	3140	3155
Mar 45	3110	3125	3140	3155	3170
Apr 45	3125	3140	3155	3170	3185
May 45	3140	3155	3170	3185	3200
Jun 45	3155	3170	3185	3200	3215
Jul 45	3170	3185	3200	3215	3230
Aug 45	3185	3200	3215	3230	3245
Sept 45	3200	3215	3230	3245	3260
Oct 45	3215	3230	3245	3260	3275

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Experimental Unburdening For Slipping Ford Auto

1936

1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	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Name _____
Address _____

Name
Address

Experimental Work on Ford Auto
#3538

59A

1907		1906		1905	
Apr 31	Ampt. 1000	100	707.81	Jan 31	Ed. 1000
May 31	Ampt. 1000	100	707.81	Feb 28	Ed. 1000
June 30	Ampt. 1000	100	707.81	Mar 31	Ed. 1000
July 31	Ampt. 1000	100	707.81	Apr 30	Ed. 1000
Aug 31	Ampt. 1000	100	707.81	May 31	Ed. 1000
Sept 30	Ampt. 1000	100	707.81	June 30	Ed. 1000
Oct 31	Ampt. 1000	100	707.81	July 31	Ed. 1000
Nov 30	Ampt. 1000	100	707.81	Aug 31	Ed. 1000
Dec 31	Ampt. 1000	100	707.81	Sept 30	Ed. 1000
1908				Oct 31	Ed. 1000
				Nov 30	Ed. 1000
				Dec 31	Ed. 1000
				1909	
				Jan 31	Ed. 1000
				Feb 28	Ed. 1000
				Mar 31	Ed. 1000
				Apr 30	Ed. 1000
				May 31	Ed. 1000
				June 30	Ed. 1000
				July 31	Ed. 1000
				Aug 31	Ed. 1000
				Sept 30	Ed. 1000
				Oct 31	Ed. 1000
				Nov 30	Ed. 1000
				Dec 31	Ed. 1000
				1910	
				Jan 31	Ed. 1000
				Feb 28	Ed. 1000
				Mar 31	Ed. 1000
				Apr 30	Ed. 1000
				May 31	Ed. 1000
				June 30	Ed. 1000
				July 31	Ed. 1000
				Aug 31	Ed. 1000
				Sept 30	Ed. 1000
				Oct 31	Ed. 1000
				Nov 30	Ed. 1000
				Dec 31	Ed. 1000
				1911	
				Jan 31	Ed. 1000
				Feb 28	Ed. 1000
				Mar 31	Ed. 1000
				Apr 30	Ed. 1000
				May 31	Ed. 1000
				June 30	Ed. 1000
				July 31	Ed. 1000
				Aug 31	Ed. 1000
				Sept 30	Ed. 1000
				Oct 31	Ed. 1000
				Nov 30	Ed. 1000
				Dec 31	Ed. 1000
				1912	
				Jan 31	Ed. 1000
				Feb 28	Ed. 1000
				Mar 31	Ed. 1000
				Apr 30	Ed. 1000
				May 31	Ed. 1000
				June 30	Ed. 1000
				July 31	Ed. 1000
				Aug 31	Ed. 1000
				Sept 30	Ed. 1000
				Oct 31	Ed. 1000
				Nov 30	Ed. 1000
				Dec 31	Ed. 1000
				1913	
				Jan 31	Ed. 1000
				Feb 28	Ed. 1000
				Mar 31	Ed. 1000
				Apr 30	Ed. 1000
				May 31	Ed. 1000
				June 30	Ed. 1000
				July 31	Ed. 1000
				Aug 31	Ed. 1000
				Sept 30	Ed. 1000
				Oct 31	Ed. 1000
				Nov 30	Ed. 1000
				Dec 31	Ed. 1000

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____Experimental Work in connection with *Marley Fork Coalfield Ltd.*
#359

1911

July 28

Lumber

27

54.4

30

38

54

76

92

104

119

134

10

21

46

66

106

58

73

74

116

8

20

23

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101

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103

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107

114

115

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103

106

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122

1911

July 28

T.H. B. Lumber

1616

1698

1716

1812

1898

1908

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1944

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Sheet No. _____

Name _____
Address _____Experimental Work in Connection with Machy Tools of Equal Limit Slides
13392

13392

July 31 Brought Forward

Aug 30

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Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____Experiment on Squinting Condensate for Cylinder Heads
#3716

1916			1917			
Aug 30	London	95	Aug 30	W Edinboro	9180	93427
Sept 30	"	90	Sept 30	"	9778	17108
Oct 31	"	95	Oct 31	"	9391	4506
	"	44	Nov 30	"	9622	1379
	"	44				1379
	"	115				
Nov 30	"	100				

Sheet No. _____

Name
Address

Sheet No. _____

Name
AddressExperimental Work on Battery Seals
43625

M. W. S.

W. S. S.

1901		1902	
Aug 30	Farmington Shannon	Aug 30	Windsor Shannon
"	"	Sept 30	"
"	"	Oct 31	"
"	"	Nov 20	"
Sept 30	"	Dec 31	"
"	"	Jan 31	"
Oct 31	"	Feb 28	"
"	"	Mar 31	"
"	"	June 30	"
Nov 20	"		
"	"		
Dec 31	"		
Jan 31	"		
May 31	"		
June 30	"		

109	109	109	109
75	63	71	71
79	114	71	71
89	76	71	71
90	100	71	71
66	100	71	71
95	130	71	71
45	66	71	71
111	46	71	71
115	57	71	71
108	04	71	71
109	93	71	71
152	111	71	71
116	100	71	71
48	50	71	71
62	106	71	71

Name
Address

Name.....
Address.....

Experimental Work on barbitol

Maria	171	26	May 31, 31	William Beckman	10.95
"	87	550	Apr 30	"	1.00
"	115	155	Apr 30	"	1.00
"	171	155	Apr 30	"	1.00
Glenn	252	155	Apr 30	"	1.00
May 31	173	155	Apr 30	"	1.00
June 30	155	155	Apr 30	"	1.00
At 31	251	155	Apr 30	"	1.00
Nov. 30	155	155	Apr 30	"	1.00
Dec. 31	155	155	Apr 30	"	1.00
Jan. 31	155	155	Apr 30	"	1.00
Feb. 28	155	155	Apr 30	"	1.00
Mar. 31	155	155	Apr 30	"	1.00
Apr. 30	155	155	Apr 30	"	1.00
May 31	155	155	Apr 30	"	1.00
June 30	155	155	Apr 30	"	1.00
July 31	155	155	Apr 30	"	1.00
Aug. 31	155	155	Apr 30	"	1.00
Sept. 30	155	155	Apr 30	"	1.00
Oct. 31	155	155	Apr 30	"	1.00
Nov. 30	155	155	Apr 30	"	1.00
Dec. 31	155	155	Apr 30	"	1.00
Jan. 31	155	155	Apr 30	"	1.00
Feb. 28	155	155	Apr 30	"	1.00
Mar. 31	155	155	Apr 30	"	1.00
Apr. 30	155	155	Apr 30	"	1.00
May 31	155	155	Apr 30	"	1.00
June 30	155	155	Apr 30	"	1.00
July 31	155	155	Apr 30	"	1.00
Aug. 31	155	155	Apr 30	"	1.00
Sept. 30	155	155	Apr 30	"	1.00
Oct. 31	155	155	Apr 30	"	1.00
Nov. 30	155	155	Apr 30	"	1.00
Dec. 31	155	155	Apr 30	"	1.00
Jan. 31	155	155	Apr 30	"	1.00
Feb. 28	155	155	Apr 30	"	1.00
Mar. 31	155	155	Apr 30	"	1.00
Apr. 30	155	155	Apr 30	"	1.00
May 31	155	155	Apr 30	"	1.00
June 30	155	155	Apr 30	"	1.00
July 31	155	155	Apr 30	"	1.00
Aug. 31	155	155	Apr 30	"	1.00
Sept. 30	155	155	Apr 30	"	1.00
Oct. 31	155	155	Apr 30	"	1.00
Nov. 30	155	155	Apr 30	"	1.00
Dec. 31	155	155	Apr 30	"	1.00
Jan. 31	155	155	Apr 30	"	1.00
Feb. 28	155	155	Apr 30	"	1.00
Mar. 31	155	155	Apr 30	"	1.00
Apr. 30	155	155	Apr 30	"	1.00
May 31	155	155	Apr 30	"	1.00
June 30	155	155	Apr 30	"	1.00
July 31	155	155	Apr 30	"	1.00
Aug. 31	155	155	Apr 30	"	1.00
Sept. 30	155	155	Apr 30	"	1.00
Oct. 31	155	155	Apr 30	"	1.00
Nov. 30	155	155	Apr 30	"	1.00
Dec. 31	155	155	Apr 30	"	1.00
Jan. 31	155	155	Apr 30	"	1.00
Feb. 28	155	155	Apr 30	"	1.00
Mar. 31	155	155	Apr 30	"	1.00
Apr. 30	155	155	Apr 30	"	1.00
May 31	155	155	Apr 30	"	1.00
June 30	155	155	Apr 30	"	1.00
July 31	155	155	Apr 30	"	1.00
Aug. 31	155	155	Apr 30	"	1.00
Sept. 30	155	155</			

Name _____
Address _____

Name _____
Address _____

Engineering Supervision, Edison Thomas Trucks Products 13990

13.9.90

1905		1906		1907		1908	
Sept 20	Lumber	92	91	Sept 30	Edward Dunn 21	10966	10966
Oct 31	"	100	100	Oct 31	"	10966	10966
"	"	100	100	Nov 30	"	10966	10966
Nov 30	"	100	100	Dec 31	"	10966	10966
"	"	100	100	Jan 31	"	10966	10966
Dec 31	"	100	100	Feb 29	"	10966	10966
"	"	100	100	Mar 31	"	10966	10966
"	"	100	100	Apr 30	"	10966	10966
"	"	100	100	May 31	"	10966	10966
"	"	100	100	Jun 30	"	10966	10966
"	"	100	100	Jul 31	"	10966	10966
"	"	100	100	Aug 31	"	10966	10966
"	"	100	100	Sept 30	"	10966	10966
"	"	100	100	Oct 31	"	10966	10966
"	"	100	100	Nov 30	"	10966	10966
"	"	100	100	Dec 31	"	10966	10966
"	"	100	100	Jan 31	"	10966	10966
"	"	100	100	Feb 29	"	10966	10966
"	"	100	100	Mar 31	"	10966	10966
"	"	100	100	Apr 30	"	10966	10966
"	"	100	100	May 31	"	10966	10966
"	"	100	100	Jun 30	"	10966	10966
"	"	100	100	Jul 31	"	10966	10966
"	"	100	100	Aug 31	"	10966	10966
"	"	100	100	Sept 30	"	10966	10966
"	"	100	100	Oct 31	"	10966	10966
"	"	100	100	Nov 30	"	10966	10966
"	"	100	100	Dec 31	"	10966	10966
"	"	100	100	Jan 31	"	10966	10966
"	"	100	100	Feb 29	"	10966	10966
"	"	100	100	Mar 31	"	10966	10966
"	"	100	100	Apr 30	"	10966	10966
"	"	100	100	May 31	"	10966	10966
"	"	100	100	Jun 30	"	10966	10966
"	"	100	100	Jul 31	"	10966	10966
"	"	100	100	Aug 31	"	10966	10966
"	"	100	100	Sept 30	"	10966	10966
"	"	100	100	Oct 31	"	10966	10966
"	"	100	100	Nov 30	"	10966	10966
"	"	100	100	Dec 31	"	10966	10966
"	"	100	100	Jan 31	"	10966	10966
"	"	100	100	Feb 29	"	10966	10966
"	"	100	100	Mar 31	"	10966	10966
"	"	100	100	Apr 30	"	10966	10966
"	"	100	100	May 31	"	10966	10966
"	"	100	100	Jun 30	"	10966	10966
"	"	100	100	Jul 31	"	10966	10966
"	"	100	100	Aug 31	"	10966	10966
"	"	100	100	Sept 30	"	10966	10966
"	"	100	100	Oct 31	"	10966	10966
"	"	100	100	Nov 30	"	10966	10966
"	"	100	100	Dec 31	"	10966	10966
"	"	100	100	Jan 31	"	10966	10966
"	"	100					

Sheet No.

Name

Address

Engineering Supervision Elson Photo Works

- 2470

June 30	Toucher	1	1153.00	June 30	E. Photo Works	1153.00	1860.10
		23	200.78	July 31	Ed Toucher	1165.00	1760.00
		25	31.30		E. Photo Works	1165.00	1760.00
		26	61.30				
		27	1.00				
		28	1.21				
		29	15.20				
July 31		100	100.00				
		3	100.00				
		10	11.30				
		42	50.00				
		63	25.00				
		66	112.12				
		117	46.00				
		120	31.00				
		124	1.88				
		130	33.00				
		132	1000.00				

Sheet No.

Name

Address

Experimental Work on Live Records

(212)

March 1	Toucher	1	1153.00	March 31	J.B. Smith Photo Works	1153.00	1860.10
		14	1.00	April 30		1153.00	1860.10
		15	1.00	May 31		1153.00	1860.10
		16	1.00	June 30		1153.00	1860.10
		17	1.00				
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		98	1.00				
		99	1.00				
		100	1.00				

Name _____
Address _____

1906		DATE		1906	
July 31	Voucher	112	100	July 31	W. H. C. Linn Bldg
		125	100		
			100		
			100		

Name _____
Address _____

Experiments - Asst. Secy U.S.N. #3993

1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100

This process may be used in Proclite's design. It must run with the grain of the paper. Sheets processed like this will not break the back and will make your book open flat.

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Lapportment of New Record Mfg. Div.

11101

1916

Month	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1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Interest on Iron-ore Lined Mould Making - per 100 lbs.

1916		1917		1918		1919		1920	
Mar 31	117	Mar 31	115.58	Mar 31	115.58	Mar 31	115.58	Mar 31	115.58
Apr 30	118	Apr 30	116.99	Apr 30	116.99	Apr 30	116.99	Apr 30	116.99
May 31	125	May 31	120.53	May 31	120.53	May 31	120.53	May 31	120.53
June 30	100	June 30	97.91	June 30	97.91	June 30	97.91	June 30	97.91
July 31	125	July 31	126.50	July 31	126.50	July 31	126.50	July 31	126.50

Sheet No. _____

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Experimental Development Work for West Dept.
24112

1916		1917		1918		1919		1920	
Mar 31	19	Mar 31	155	Mar 31	1100	Mar 31	1100	Mar 31	1100
Apr 30	113	Apr 30	110	Apr 30	1100	Apr 30	1100	Apr 30	1100
May 31	110	May 31	110	May 31	1100	May 31	1100	May 31	1100
June 30	110	June 30	110	June 30	1100	June 30	1100	June 30	1100
July 31	110	July 31	110	July 31	1100	July 31	1100	July 31	1100
Aug 31	110	Aug 31	110	Aug 31	1100	Aug 31	1100	Aug 31	1100
Sep 30	110	Sep 30	110	Sep 30	1100	Sep 30	1100	Sep 30	1100
Oct 31	110	Oct 31	110	Oct 31	1100	Oct 31	1100	Oct 31	1100
Nov 30	110	Nov 30	110	Nov 30	1100	Nov 30	1100	Nov 30	1100
Dec 31	110	Dec 31	110	Dec 31	1100	Dec 31	1100	Dec 31	1100
Total	1100	Total	1100	Total	1100	Total	1100	Total	1100

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Edwin Eric Hedberg Blank Mould Coast
Hedberg

1916		1917		1918		1919		1920	
Mar 31	Humboldt	86	15	Mar 31	Idaho	86	15	Mar 31	Idaho
		109	157	Mar 31	Idaho	86	157	Mar 31	Idaho
		119	109	Mar 31	Idaho	86	109	Mar 31	Idaho
Apr 30		67	1100	Apr 30		1100	Apr 30		1100
		74	10	Apr 30		10	Apr 30		10
		74	413	Apr 30		413	Apr 30		413
		74	387	Apr 30		387	Apr 30		387
May 31		135	105	May 31		105	May 31		105
June 30		101	101	June 30		101	June 30		101
		125	117			117			117

Sheet No. _____

Name _____

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Experiment on Extracting Salts from Minerals

68

1916

Bar. 30.00

19. 1.12.15

16. 1.10.15

20. 1.60.15

21. 1.90.15

36. 1.00.15

40. 1.10.15

56. 1.2.15

65. 1.40.15

67. 1.40.15

72. 1.40.15

78. 1.00.15

84. 1.10.15

10. 1.10.15

13. 2.01.15

20. 37.60.15

93. 1.1.15

128. 5.2.15

135. 14.0.15

35. 38.70.15

108. 99.15

123. 7.40.15

94. 76.15

135. 46.75.15

135. 46.75.15

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Experimental Orchestra

H156

1886

1886

<i>Apr 30 Voucher</i>	35	132.69	Apr 30	Edmund Shumacher	11232	11232	11232
	38	51.00	May 31	"	11281	11281	11281
	40	37.64	"	M. C. du Billa	11206	11206	11206
	46	40	"	"	11209	11209	11209
	96	55.18	June 30	"	11246	11246	11246
<i>May 31</i>	46	133.33	July 31	"	11650	11650	11650
	48	250	"	"	86	86	86
	57	1250	"	"			
	72	08	"	"			
	76	150	"	"			
	82	704	"	"			
	135	1178.74	"	"			
<i>June 30</i>	31	1124	July 31	Edmund Shumacher	11232	11232	11232
	53	560	"	"	11281	11281	11281
	109	715.74	"	"	11206	11206	11206
	117	200	"	"	11209	11209	11209
<i>July 31</i>	37	8600	"	"	11246	11246	11246
	42	1721	"	"	11650	11650	11650
	64	18.00	"	"			
	125	72006	"	"			

Sheet No. _____

Name _____

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Sheet No. _____

70

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Address _____

Experiments on Preparedness
No. 36

1916

Mar 30 *Launched*

17.1	100
17.0	17.76
9.1	06
9.1	11.10
4.8	11.38
1.9	11.4
1.8	11.47
1.0	11.51
1.2	11.58

May 31 "

June 30 "

July 31 "

Sheet No. _____

Name _____

Address

Sheet No. _____

Name _____

Address

71

Expense of Clearing House

1906		1907	
May 30	Black hall	83	36
		92	40.10
May 31	"	125	50.10
June 30	"	36	19.31
		49	6.70
		53	2.25
		95	33.60
		108	11.99
July 31	"	119	12.50
		57	2.52
		59	5.01
		60	24.00
		96	60
		132	240.88
		1126	64.00
			6.75
			11.23
			11.29
			11.29
			11.25
			11.74
			60.48
			7.20
			17.00
			17.55
			330.66
			6.50

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Engineering Work on Grand Island

1916

General Expenses

May 31 93.
June 30 94.
July 31 123.

1917

2936 Grand Island Dr. 11876.

36196 May 31 11876.
72788 June 30 11876.
23158 July 31 11876.
61

37000

54703

23558

61

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____

Experimental Work on Aniline
H. I. N. S.

73

1916

Apr. 30 Voucher 94
May 31 " 105
" 31 " 105
June 30 " 108
July 31 " 68
" 100
" 121

1916

Apr. 30 Voucher 94
May 31 " 105
" 31 " 105
June 30 " 108
July 31 " 68
" 100
" 121

129.24
236.46
176.30
116.77
179.83

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Experimental Work, etc. Thermal

1916

Nov 30 *Boat* 96.
 Dec 31 " 101.
 Jan 31 " 105.
 Feb 31 " 108.
 Mar 31 " 112.

96.
 101.
 105.
 108.
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 115.
 118.
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76

Sheet No. _____

Name _____

Address _____

Sheet No. 50

Name _____

Address _____

Experiment on new Dopes for Plating Drums # 2273

1911			1911		
Feb 28 To Voucher	102.	1,000	Feb 28 By Edison Inc 3457	3000.	
" " " "	103.	2000	Mar 31. " " 3606	13215	
Mar 31 " " "	116	633		11215	
" 4 " " "	117	5368			
" 7 " " "	118	4126			
		16215		16215	

Thomas A. Edison Jr L 424

1911			1911		
Apr 30 To Voucher	35.	2828	Apr 30 By L.M. Inc	4099	2885
" " " "	104.	60	Oct 31. " " "	1800	2812
Oct 31. " " "	20.	2578	Nov 30. " " "	1500	1319
Nov 30. " " "	20.	1750	Dec 31. " " "	6900	1500
Dec 31. " " "	95.	1750	Dec 31. " " "	2100	1750
Dec 31. " " "	16	500			2800
		9492			9492
Dec 30 To Voucher	81	29	Dec 31. By L.M. Inc 7901	29	
Oct 31. " " "	37	1523	Oct 31. " " "	10550	6384
" " " "	116	216			
" " " "	117	4607			

Sheet No. _____

Name _____
Address _____Equip with Speed Limit Service 2 motor Cycles
#3696

1924		1925	
June 30	Donner	106	2164
July 31	"	136	1423
June 30	Edward Donner	8970	2164
July 31	"	9069	1423

Engineering Work & Material for New Kerosene Stoves

1924		1925	
July 31	Briggs & Stratton	109	1887
Aug 30	Donner	50	275
		75	153
		89	340
		114	08
		122	44
		125	1520
		136	56487
		39	760
		74	522
		78	377
		79	510
		80	11
		90	46492
		95	1721
		95	6419
		111	66
		87	3669
		109	2070

Sheet No. _____

Name _____
Address _____

Edward Donner, Esq.

1924		1925	
Nov 30	Donner	114	664
		130	5805
		144	2001
		152	840
		176	688
Dec 31	"	114	664
		130	5805
		144	2001
		152	840
		176	688
Dec 31	"	114	664
		130	5805
		144	2001
		152	840
		176	688

Experiments on Refrigerators

1924		1925	
Dec 31	Donner	25	240
		26	20
		27	1138
		28	1500
		29	300
		30	360
		31	175
		109	381
		111	304
		112	761
		113	500
		114	26
		115	61237
		116	3000
		117	100
		118	86
		119	1401
		120	120
		121	120
		122	70
		123	250
		124	25
		125	25
		126	25
		127	25
		128	25
		129	25
		130	25
		131	25
		132	25
		133	25
		134	25
		135	25
		136	25
		137	25
		138	25
		139	25
		140	25
		141	25
		142	25
		143	25
		144	25
		145	25
		146	25
		147	25
		148	25
		149	25
		150	25

Sheet No. _____

Name _____
Address _____Experimental on Extracting Glucose from Cornmeal
1905

1905		1906	
Dec. 31	185.50	Dec. 31	185.50
Jan. 1	185.50	Jan. 1	185.50
Jan. 31	185.50	Jan. 31	185.50
Feb. 1	185.50	Feb. 1	185.50
Feb. 29	185.50	Feb. 29	185.50
Mar. 1	185.50	Mar. 1	185.50
Mar. 31	185.50	Mar. 31	185.50
Apr. 1	185.50	Apr. 1	185.50
Apr. 30	185.50	Apr. 30	185.50
May 1	185.50	May 1	185.50
May 31	185.50	May 31	185.50
Jun. 1	185.50	Jun. 1	185.50
Jun. 30	185.50	Jun. 30	185.50
Jul. 1	185.50	Jul. 1	185.50
Jul. 31	185.50	Jul. 31	185.50
Aug. 1	185.50	Aug. 1	185.50
Aug. 31	185.50	Aug. 31	185.50
Sep. 1	185.50	Sep. 1	185.50
Sep. 30	185.50	Sep. 30	185.50
Oct. 1	185.50	Oct. 1	185.50
Oct. 31	185.50	Oct. 31	185.50
Nov. 1	185.50	Nov. 1	185.50
Nov. 30	185.50	Nov. 30	185.50
Dec. 1	185.50	Dec. 1	185.50
Dec. 31	185.50	Dec. 31	185.50

Mar. 31

Remained to 1906

Laminated Glucose from Cornmeal

1906		1907	
Dec. 31	185.50	Dec. 31	185.50
Jan. 1	185.50	Jan. 1	185.50
Jan. 31	185.50	Jan. 31	185.50
Feb. 1	185.50	Feb. 1	185.50
Feb. 29	185.50	Feb. 29	185.50
Mar. 1	185.50	Mar. 1	185.50
Mar. 31	185.50	Mar. 31	185.50
Apr. 1	185.50	Apr. 1	185.50
Apr. 30	185.50	Apr. 30	185.50
May 1	185.50	May 1	185.50
May 31	185.50	May 31	185.50
Jun. 1	185.50	Jun. 1	185.50
Jun. 30	185.50	Jun. 30	185.50
Jul. 1	185.50	Jul. 1	185.50
Jul. 31	185.50	Jul. 31	185.50
Aug. 1	185.50	Aug. 1	185.50
Aug. 31	185.50	Aug. 31	185.50
Sep. 1	185.50	Sep. 1	185.50
Sep. 30	185.50	Sep. 30	185.50
Oct. 1	185.50	Oct. 1	185.50
Oct. 31	185.50	Oct. 31	185.50
Nov. 1	185.50	Nov. 1	185.50
Nov. 30	185.50	Nov. 30	185.50
Dec. 1	185.50	Dec. 1	185.50
Dec. 31	185.50	Dec. 31	185.50

Sheet No. _____

Name _____
Address _____Experimental Work on Martin's Bakery
1905

1905		1906	
Jan. 1	185.50	Jan. 1	185.50
Jan. 31	185.50	Jan. 31	185.50
Feb. 1	185.50	Feb. 1	185.50
Feb. 29	185.50	Feb. 29	185.50
Mar. 1	185.50	Mar. 1	185.50
Mar. 31	185.50	Mar. 31	185.50
Apr. 1	185.50	Apr. 1	185.50
Apr. 30	185.50	Apr. 30	185.50
May 1	185.50	May 1	185.50
May 31	185.50	May 31	185.50
Jun. 1	185.50	Jun. 1	185.50
Jun. 30	185.50	Jun. 30	185.50
Jul. 1	185.50	Jul. 1	185.50
Jul. 31	185.50	Jul. 31	185.50
Aug. 1	185.50	Aug. 1	185.50
Aug. 31	185.50	Aug. 31	185.50
Sep. 1	185.50	Sep. 1	185.50
Sep. 30	185.50	Sep. 30	185.50
Oct. 1	185.50	Oct. 1	185.50
Oct. 31	185.50	Oct. 31	185.50
Nov. 1	185.50	Nov. 1	185.50
Nov. 30	185.50	Nov. 30	185.50
Dec. 1	185.50	Dec. 1	185.50
Dec. 31	185.50	Dec. 31	185.50

Jan. 1

Jan. 31

Feb. 1

Feb. 29

Mar. 1

Mar. 31

Apr. 1

Apr. 30

May 1

May 31

Jun. 1

Jun. 30

Jul. 1

Jul. 31

Aug. 1

Aug. 31

Sep. 1

Sep. 30

Oct. 1

Oct. 31

Nov. 1

Nov. 30

Dec. 1

Dec. 31

Laminated Glucose from Cornmeal

1906		1907	
Jan. 1	185.50	Jan. 1	185.50
Jan. 31	185.50	Jan. 31	185.50
Feb. 1	185.50	Feb. 1	185.50
Feb. 29	185.50	Feb. 29	185.50
Mar. 1	185.50	Mar. 1	185.50
Mar. 31	185.50	Mar. 31	185.50
Apr. 1	185.50	Apr. 1	185.50
Apr. 30	185.50	Apr. 30	185.50
May 1	185.50	May 1	185.50
May 31	185.50	May 31	185.50
Jun. 1	185.50	Jun. 1	185.50
Jun. 30	185.50	Jun. 30	185.50
Jul. 1	185.50	Jul. 1	185.50
Jul. 31	185.50	Jul. 31	185.50
Aug. 1	185.50	Aug. 1	185.50
Aug. 31	185.50	Aug. 31	185.50
Sep. 1	185.50	Sep. 1	185.50
Sep. 30	185.50	Sep. 30	185.50
Oct. 1	185.50	Oct. 1	185.50
Oct. 31	185.50	Oct. 31	185.50
Nov. 1	185.50	Nov. 1	185.50
Nov. 30	185.50	Nov. 30	185.50
Dec. 1	185.50	Dec. 1	185.50
Dec. 31	185.50	Dec. 31	185.50

Sheet No.

Name

Address

Experimental Work on Losses for Pumping from Wells
L.H.B.

Sheet No.

Name

Address

Engineering Department in Connection with Petrol
from Baku, etc.

1916		1916	
July 27	107	July 29	107.5
"	106	"	107.5
"	119	"	112.5
Apr 30	129	"	112.5
"	61	"	112.5
"	17	"	112.5
"	90	"	112.5
"	73	"	112.5
"	76	"	112.5
"	93	"	112.5
"	103	"	112.5
"	128	"	112.5
"	135	"	112.5
"	102	"	112.5

1916
July 31 December 1.38 10.173

Engineering Department in Connection with
Petrol from Baku, etc.

July 31 December 1.38 10.173

1916
July 27 December 103 10000 July 28 10000 10000

Address

Address

1909		1909		1909	
June 30. To vouchers	83	1039	June 30. By Cash & M. Service	1102	1039
July 28 "	17	1600	" " " " " "	187	2158
" " " "	66	57	May 31 " " " "	217	2158
May 31 "	85	57	May 31 " " " "	217	2158
June 17 "	46	355	June 30 " " " "	670	2158
" " " "	83	3248	June 31 " " " "	691	2158
Nov 30 "	122	3270			
Dec 31 "	16	3688			
		3688			3688

1909			1909		
Nov 30	To Voucher	103	Nov 30	By L.H. Ing	588
Dec 31	"	103	Dec 31	" "	1888
1910			1910		
Oct 31	Transfer	177	Oct 31	By L.H. Ing	1539
Nov 30	"	212	Nov 30	" "	1663

Device to fasten Masters on spiders for Copper Plating Machine. #2209

1910	act 31 70 vouchers	94		
		93		

Sheet No. 101

Name
Address

Charles Emerson L & M

Sheet No.

Name
AddressElectrotype Mercury Oxide Process
#3473

1910	Oct 31 To Voucher	96	70	1910	Oct 31 To L & M. Inv. 2810	70
------	-------------------	----	----	------	----------------------------	----

1910	Oct 31 To Voucher	96	30	1910	Oct 31 By L & M. Inv. 2811	30
July 31	"	76	320	July 31	" " " 4472	320

A. Erickson

Expenses to Business Phone in N. Y. (oth. Business chgs)

1910	Nov 30 To Voucher	85	365	1910	Nov 30 By Bus. Phone Inv. 2088	4994
		126	503			
		127	503			
		128	2338			
		129	087			
			177 27			4994

1913

Aug 31 To Lumber	116
Sept 30 " " "	109
Oct 31 " " "	122

1911

Aug 31 By L & C. Wts. Inv.	7726	2024
Sept 30 " " " "	8037	11409
Oct 31 " " " "	8185	2067

1913

Oct 31 To Lumber

Experimental Work on Bird Cages

Nov 30

Dec 31

1913

Nov 30 To Lumber

Experimental Work on Lighting for Bird Cages

Dec 31

1914

Jan 31

Dec 31 Balance to folio 57A

Dec 31 Balance to folio 57A

1914

Jan 31

Madeline Edison
L 271

1912	Nov 31	To Balance	144	1912	Nov 30	By L 271 Dr	5217	190
------	--------	------------	-----	------	--------	-------------	------	-----

Experimental Work to develop the design of a battery for motor cycle

1913	Nov 30	To Balance	144	2160	Nov 30	By L 271 Dr	5217	2160
	Dec 31	"	156	511	Dec 31	"	5211	521
	Jan 31	"	177	1370	Jan 31	"	5167	1375
	Feb 31	"	106	2593	Feb 31	"	5167	2393
	Mar 31	"	116	3046	Mar 31	"	5204	3040
	Apr 30	"	116	3046	Apr 30	"	5276	3770
	May 31	"	116	3741	May 31	"	5276	3770
	Jun 30	"	27	35	Jun 30	"	5276	3770
	Jul 31	"	106	867	Jul 31	"	5276	3770
	Aug 31	"	136	1041	Aug 31	"	5276	3770
	Sep 30	"	81	600	Sep 30	"	5276	3770
	Oct 31	"	90	1230	Oct 31	"	5276	3770

Experiment on recharging battery

1913	Nov 30	To Balance	144	1763	Nov 30	By L 271 Dr	5237	1763
	Dec 31	"	43	641	Dec 31	"	5241	1806
	Jan 31	"	156	1008	Jan 31	"	5241	1806
	Feb 28	"	134	1142	Feb 28	"	5241	1806

Electric Coach Corp. L 271

1912	Nov 31	To Balance	144	312	Nov 30	By L 271 Dr	5200	750
	Dec 31	"	156	432	Dec 31	"	5200	750

Edison Kinestrophes Co. L 271

1913	Nov 30	To Balance	38	10000	Nov 30	By L 271 Dr	5116	10000
	Dec 31	"	124	50	Dec 31	"	5071	50
	Jan 31	"	96	700	Jan 31	"	5071	4500
	Feb 28	"	134	3500	Feb 28	"	5121	50
	Mar 31	"	116	50	Mar 31	"	5121	450
	Apr 30	"	116	450	Apr 30	"	5121	160
	May 31	"	115	160	May 31	"	5121	350
	June 30	"	106	1350	June 30	"	5121	350

Electrical Welding Machine

1913	Nov 31	To Balance	115	50	Nov 31	By L 271 Dr	5388	268
	Dec 31	"	139	218	Dec 31	"	5401	520
	Jan 31	"	127	500	Jan 31	"	5401	541
	Feb 28	"	112	341	Feb 28	"	5401	3906
	Mar 31	"	106	3906	Mar 31	"	5401	1532
	May 31	"	105	1509	May 31	"	5401	1532

Name _____
Address _____Experimental Work on Sewer Oxide
12594

12594	12594	12594	12594	12594	12594
Apr 31	116	1050	Apr 31	8396	1050
May 31	117	7151	May 31	8397	7151
June 31	118	6390	June 31	8398	6390
July 31	116	12400	July 31	8399	12400
Aug 31	26	1017	Aug 31	8400	1017
Sept 31	38	6499	Sept 31	8401	6499
Oct 31	37	5750	Oct 31	8402	5750
Nov 31	116	5750	Nov 31	8403	5750
Dec 31	216	123	Dec 31	8404	123
Jan 31	115	9946	Jan 31	8405	9946
Feb 31	106	9946	Feb 31	8406	9946
Mar 31	38	08	Mar 31	8407	08
Apr 31	136	4803	Apr 31	8408	4803
May 31	90	1027	May 31	8409	1027
June 31	206	385	June 31	8410	385

Experimental Work on Battery Test 12595

12595	12595	12595	12595	12595	12595
Apr 31	131	8397	Apr 31	8411	8397
May 31	31	66	May 31	8412	66
June 31	116	4831	June 31	8413	4831
July 31	71	270	July 31	8414	270
Aug 31	116	1761	Aug 31	8415	1761
Sept 31	101	18	Sept 31	8416	18
Oct 31	103	1673	Oct 31	8417	1673
Nov 31	115	14523	Nov 31	8418	14523
Dec 31	25	99	Dec 31	8419	99
Jan 31	27	35	Jan 31	8420	35
Feb 31	54	576	Feb 31	8421	576
Mar 31	71	120	Mar 31	8422	120
Apr 31	106	24119	Apr 31	8423	24119
May 31	31	191	May 31	8424	191
June 31	85	1362	June 31	8425	1362
July 31	136	15719	July 31	8426	15719

Engineering Work 177 Meters for New Kinetic Study 12596

12596	12596	12596	12596	12596	12596
Mar 31	66	175	Mar 31	8427	175
Apr 31	56	16914	Apr 31	8428	16914
May 31	116	31351	May 31	8429	31351
June 31	98	11459	June 31	8430	11459
July 31	61	1429	July 31	8431	1429
Aug 31	115	57789	Aug 31	8432	57789
Sept 31	42	1842	Sept 31	8433	1842
Oct 31	60	66	Oct 31	8434	66
Nov 31	71	10	Nov 31	8435	10
Dec 31	92	246	Dec 31	8436	246
Jan 31	93	59	Jan 31	8437	59
Feb 31	97	2050	Feb 31	8438	2050
Mar 31	106	71454	Mar 31	8439	71454
Apr 31	34	895	Apr 31	8440	895
May 31	35	700	May 31	8441	700
June 31	88	232	June 31	8442	232
July 31	1	123	July 31	8443	123

Name _____
Address _____

Experimental Work on L. E. Myers Pump 12598

12598	12598	12598	12598	12598	12598
July 31	136	115	July 31	8444	115
Aug 31	16	266	Aug 31	8445	266
Sept 31	71	490	Sept 31	8446	490
Oct 31	77	85	Oct 31	8447	85
Nov 31	81	170	Nov 31	8448	170
Dec 31	90	15	Dec 31	8449	15
Jan 31	25	6913	Jan 31	8450	6913
Feb 31	28	287	Feb 31	8451	287
Mar 31	95	116	Mar 31	8452	116
Apr 31	41	1639	Apr 31	8453	1639
May 31	42	16	May 31	8454	16
June 31	105	268	June 31	8455	268
July 31	105	943	July 31	8456	943

Experimental Work on L. E. Myers Pump 12599

12599	12599	12599	12599	12599	12599
July 31	136	10521	July 31	8457	10521
Aug 31	90	12400	Aug 31	8458	12400
Sept 31	95	6715	Sept 31	8459	6715
Oct 31	106	9070	Oct 31	8460	9070
Nov 31	106	10531	Nov 31	8461	10531
Dec 31	106	1440	Dec 31	8462	1440
Jan 31	106	6578	Jan 31	8463	6578

Experimental Work on Electric Motor 12600

12600	12600	12600	12600	12600	12600
Sept 31	18	30	Sept 31	8464	30
Oct 31	21	6400	Oct 31	8465	6400
Nov 31	42	10	Nov 31	8466	10
Dec 31	115	9016	Dec 31	8467	9016
Jan 31	105	101	Jan 31	8468	101
Feb 31	109	260	Feb 31	8469	260
Mar 31	111	6400	Mar 31	8470	6400

Sheet No.

Name
AddressExperimental Work for Record Eging Machines
#3749

1914				1914			
Sept 30	Voucher	90	1237	Sept 31	M. Edison & Son	975.1	1237
Oct 31	"	115	1458	Oct 31	"	917.6	1458
Nov 30	"	109	219	Nov 30	"	946.7	219

Sheet No.

Name
AddressExtrapolating One Copper Pan
#11167

1914				1914			
Apr 30	Voucher	94	817.24	Apr 29	P.O. & Son	1120.1	817

1914				1914			
Nov 30	Voucher	106	191	Nov 30	M. Edison & Son	949.3	334.1
Dec 31	"	109	3150	Dec 31	"	963	1060
July 27	"	20	1060	July 28	"	991.7	71

1914				1914			
Apr 30	Voucher	94	1120.1	Apr 29	P.O. & Son	1120.1	817
May 31	"	10	1161	May 31	"	1144	1161
June 31	"	68	1120	June 31	"	1100	1100
		120	126			126	126

1915				1915			
July 31	Voucher	256	2112	July 31	E. S. B. & Son	1170.1	2512
Aug 31	"	107	2451	Aug 31	"	1079.0	2906
	"	117	21	Sept 30	"	1063	2754.6
	"	201	2670	Oct 31	"	1066	678.3
Sept 30	"	170	140	Nov 30	"	1063.5	437.3
	"	140	11	Dec 31	"	1070.1	706.8
	"	199	206.3				
	"	200	37				
Oct 31	"	121	177				
	"	80	157				
Nov 30	"	157	210.3				
	"	212	105.7				
Dec 31	"	120	120				
	"	120	120				
		160					

1915				1915			
June 30	Voucher	105	310	June 30	E. S. B. & Son	1170.1	310.00
July 31	"	135	240	July 31	"	1173	240.00

11223

1916	
3079 E Inc. Control	11455

51123

108	7164
91	17500
131	2138
132	8439

1871-72. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000. 1001. 1002. 1003. 1004. 1005. 1006. 1007. 1008. 1009. 1010. 1011. 1012. 1013. 1014. 1015. 1016. 1017. 1018. 1019. 1020. 1021. 1022. 1023. 1024. 1025. 1026. 1027. 1028. 1029. 1030. 1031. 1032. 1033. 1034. 1035. 1036. 1037. 1038. 1039. 1040. 1041. 1042. 1043. 1044. 1045. 1046. 1047. 1048. 1049. 1050. 1051. 1052. 1053. 1054. 1055. 1056. 1057. 1058. 1059. 1060. 1061. 1062. 1063. 1064. 1065. 1066. 1067. 1068. 1069. 1070. 1071. 1072. 1073. 1074. 1075. 1076. 1077. 1078. 1079. 1080. 1081. 1082. 1083. 1084. 1085. 1086. 1087. 1088. 1089. 1090. 1091. 1092. 1093. 1094. 1095. 1096. 1097. 1098. 1099. 1100. 1101. 1102. 1103. 1104. 1105. 1106. 1107. 1108. 1109. 1110. 1111. 1112. 1113. 1114. 1115. 1116. 1117. 1118. 1119. 1120. 1121. 1122. 1123. 1124. 1125. 1126. 1127. 1128. 1129. 1130. 1131. 1132. 1133. 1134. 1135. 1136. 1137. 1138. 1139. 1140. 1141. 1142. 1143. 1144. 1145. 1146. 1147. 1148. 1149. 1150. 1151. 1152. 1153. 1154. 1155. 1156. 1157. 1158. 1159. 1160. 1161. 1162. 1163. 1164. 1165. 1166. 1167. 1168. 1169. 1170. 1171. 1172. 1173. 1174. 1175. 1176. 1177. 1178. 1179. 1180. 1181. 1182. 1183. 1184. 1185. 1186. 1187. 1188. 1189. 1190. 1191. 1192. 1193. 1194. 1195. 1196. 1197. 1198. 1199. 1200. 1201. 1202. 1203. 1204. 1205. 1206. 1207. 1208. 1209. 1210. 1211. 1212. 1213. 1214. 1215. 1216. 1217. 1218. 1219. 1220. 1221. 1222. 1223. 1224. 1225. 1226. 1227. 1228. 1229. 1230. 1231. 1232. 1233. 1234. 1235. 1236. 1237. 1238. 1239. 1240. 1241. 1242. 1243. 1244. 1245. 1246. 1247. 1248. 1249. 1250. 1251. 1252. 1253. 1254. 1255. 1256. 1257. 1258. 1259. 1260. 1261. 1262. 1263. 1264. 1265. 1266. 1267. 1268. 1269. 1270. 1271. 1272. 1273. 1274. 1275. 1276. 1277. 1278. 1279. 1280. 1281. 1282. 1283. 1284. 1285. 1286. 1287. 1288. 1289. 1290. 1291. 1292. 1293. 1294. 1295. 1296. 1297. 1298. 1299. 1300. 1301. 1302. 1303. 1304. 1305. 1306. 1307. 1308. 1309. 1310. 1311. 1312. 1313. 1314. 1315. 1316. 1317. 1318. 1319. 1320. 1321. 1322. 1323. 1324. 1325. 1326. 1327. 1328. 1329. 1330. 1331. 1332. 1333. 1334. 1335. 1336. 1337. 1338. 1339. 1340. 1341. 1342. 1343. 1344. 1345. 1346. 1347. 1348. 1349. 1350. 1351. 1352. 1353. 1354. 1355. 1356. 1357. 1358. 1359. 1360. 1361. 1362. 1363. 1364. 1365. 1366. 1367. 1368. 1369. 1370. 1371. 1372. 1373. 1374. 1375. 1376. 1377. 1378. 1379. 1380. 1381. 1382. 1383. 1384. 1385. 1386. 1387. 1388. 1389. 1390. 1391. 1392. 1393. 1394. 1395. 1396. 1397. 1398. 1399. 1400. 1401. 1402. 1403. 1404. 1405. 1406. 1407. 1408. 1409. 1410. 1411. 1412. 1413. 1414. 1415. 1416. 1417. 1418. 1419. 1420. 1421. 1422. 1423. 1424. 1425. 1426. 1427. 1428. 1429. 1430. 1431. 1432. 1433. 1434. 1435. 1436. 1437. 1438. 1439. 1440.

84.111 July 31 DGE Inc. Cont. 799 E. 1173rd 84.111

105
13246
105
#3224
+3554
52
#3297
#3233
53
#3362
53
+3386
#3434
53
#3438
#3436
54
54
3561
106
13577
106
107
13679
107
13835
20
#3838
21
#3829
109
#3880
54
#3877
#3934
109
#3945
108
#3948
#3974
109
109
#4029
#4046
109
#4071
#4066
111
#4093
#4189
#4178

Sheet No. _____

Name _____

Address _____

Film Plant, Eastern of New

#2131

1921

July 21

March 31

Comber

1147

17.1

1.500

37.50

July 21

March 31

By J. H. Schmidt & Co. Inc.

1921

1500

37.50

Do not remove pages and do not insert any other papers or documents in this book. It is a record of the work of the company and should be kept as such. The pages are numbered 1 to 100 and the index is on the inside cover.

100

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Film Blank, Equipment of No. 8523 g

21

1936		1937	
July 25	147	July 28	541.9
Mar 31	46	Mar 31	275
"	97	Apr 30	575
"	171	May 31	813.43
Apr 30	26	June 30	724
"	70	July 31	370
"	87	Aug 31	240
"	97	Sept 30	120.7
May 31	135	Oct 31	5.5
"	137	Nov 30	23
"	283	Dec 31	141.56
June 30	34	Jan 31	10
"	111	Feb 29	0.8
"	168	"	36
"	251	"	180.87
July 31	20	"	346
"	46	"	11
"	47	"	67
"	78	"	62
"	93	"	920
"	776	"	13520
Aug 31	29	"	864
"	41	"	120
"	40	"	1251
Sept 30	251	"	21134
"	86	"	26
"	116	"	500
"	200	"	8524
Oct 31	177	"	8528
Nov 30	246	"	955
"	157	"	28
"	274	"	10521
Dec 31	200	"	276
"	226	"	9896
Jan 31	188	"	8118
Feb 29	30	"	120
"	126	"	1543

This account is not valid for payment on film until it is properly audited and approved by the Bureau of the Census. It is not to be used for any other purpose.

 I Q
 X

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

52

Five Bounds Killer # 3297

1913

Mar 31 To Banker 120.

1913

225 Mar 31 By J.D. & Son Dec 1912

225

Five Bound Killer 12323

1913

Apr 30 To Banker 140.

1913

225 Apr 30 By J.D. & Son Dec 1912

225

I Q

X

Sheet No. _____

Name _____

Address _____

First Round Filler

1936

Sheet No. _____

Name _____

Address _____

N. Ford L & M

1913 May 31 To Lunch 117.2	225	1913 May 31 By P. B. Edm. Cash 7526	225
1913 June 30 To Lunch 129	675	1913 June 30 By P. B. Edm. Cash 7671	675
1913 July 31 To Lunch 129	225	1913 July 31 By P. B. Edm. Cash 7703	225
1913 July 31 To Lunch 129	225	1913 July 31 By P. B. Edm. Cash 7704	225

Second Round Filler

1913

1913 Aug 31 To Lunch 116	1200	1913 Dec 31 By General Expense 204	1200
Sept 30 " " 31	800		
Oct 31 " " 159	1200		
Nov 31 " " 204	2000		

1913 Nov 30 To Lunch 129	1000	1913 Nov 30 By L & M Cash 8555	1000
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Ford Filler Mending Machines, Patterns etc.

1913 Mar 31 To Lunch 171	1000	1913 Mar 31 By Edm. Cash 7777	1000
-----------------------------	------	----------------------------------	------

Sheet No. _____

Name
Address*Langray for Bureau of Pds
13924*

<i>188</i> June 30. <i>Langray</i> 63	<i>1912</i> June 30 <i>M. E. G. G. G.</i> 10185	<i>2921</i>
<i>July 31</i> " 751	<i>July 31</i> " 10139	<i>704</i>
<i>July 31</i> " 756	<i>July 31</i> " 10170	

<i>188</i> June 30. <i>Langray</i> 63	<i>1912</i> June 30 <i>M. E. G. G. G.</i> 10185	<i>2921</i>
<i>July 31</i> " 751	<i>July 31</i> " 10139	<i>704</i>
<i>July 31</i> " 756	<i>July 31</i> " 10170	

Sheet No. _____

Name
Address*Francis 9/3 of Map Edison Co's Water System
111267*

<i>188</i> July 31 <i>Langray</i> 132	<i>1912</i> July 31 <i>Edison Co's Water System</i> 111267	<i>521</i>
<i>July 31</i> " 132	<i>July 31</i> " 111267	
<i>July 31</i> " 132	<i>July 31</i> " 111267	

<i>188</i> July 31 <i>Langray</i> 132	<i>1912</i> July 31 <i>Edison Co's Water System</i> 111267	<i>521</i>
<i>July 31</i> " 132	<i>July 31</i> " 111267	
<i>July 31</i> " 132	<i>July 31</i> " 111267	

Sheet No. _____

Name
AddressName for Chart of Locational Equivalents
4336

Sheet No. 124

Name
Address

Turnace Lopp # 3061

1912
July 31 Voucher 132 1st July 31 to Oct 31 1912 11776 64

1912
Aug 31 20 Voucher 129 1912
Aug 31 to July 31 1912 6576 318

Fisture # 3111

1912
Aug 30 20 Voucher 121 1912
Oct 31 " " " " " 6576 7
129 318 127

Field Form # 2118

1912
Nov 30 20 Voucher 121 1912
Nov 30 to Aug 31 1912 6576 225

Five Gallons Solution
#3697

1914
July 31 Lumber 136 262
1914
July 31 By S.A.B. and Son 91.06 262

Flexible Coupling
18945

1914
July 31 Lumber 251 337
1914
July 31 " 77 300
78 48
78 40
78 100
1914
July 31 Edison & Son 10116 337
1914
July 31 " 10200 315

1915

Feed Screw & Nut #3235

July 31 Lumber 114 1606
1915
July 31 By S.A.B. and Son 10277 1606

1915

Fencing Rails #3245

Aug 31 Lumber 86 1600
Sept 31 " 105 1706
1915
Aug 31 S.A.B. and Son 10277 1600
1915
Sept 31 " 10277 1706

1915

Frames & Bridges #3250

Mar 31 Lumber 37 16
1915
Apr 30 " 77 64.53
1915
May 31 By S.A.B. and Son 908 31.35
1915
May 31 " 908 31.35

1915

Smooth Scaffolding #32911

Aug 31 Lumber 721 1050
Sept 31 " 200 600
1915
Aug 31 Edison & Son 10277 1050
1915
Sept 31 " 10277 600

C. E. Gustafson									
1916									
May 31	Truck	1.35	2.18	May 31	C. E. Gustafson	11.15			0.75
June 30	"	1.01	4.71	June 30	"	11.95			4.71
July 31	"	1.32	2.87	July 31	"	11.95			2.87

Bear Bearings Complete 4-11-89				
May 21	Vancouver	52	82 May 21 NE E Sea Center 2-11-86	2201
June 20	"	53	1368 June 20 " " 11-87	10506
		107	1161	
		108	1069	
			1067	

<div style="text-align: center;"> <i>Phalaris Complanata</i> No. 1178 </div>									
1916									
May 31	Touchel	721	713	May 31	285	11256		16570	
		714	624	June do	"	11257		33506	
		923	100	July 31	"	11258		33515	
		96	100						
		124	100						
June 30	"	101	100						
		101	100						
July 31		123	100						

Sheet No. 2

Name
Address

W. E. Gilmore

Labor & Material for

SEE OTHER SHEETS FOR DEDUCTIONS, ETC.

1908

Mar 31 To Voucher

69

333

Mar 31 By R.M. Shwice

59

2869

Apr 30 " " "

71

2536

Apr 30 " " "

114

4392

" " " "

34

450

May 31 " " "

189

7095

" " " "

36

228

June 30 " " "

258

2245

" " " "

50

220

July 31 " " "

324

1736

" " " "

76

25

Aug 31 " " "

393

1825

" " " "

80

410

Sept 30 " " "

475

1825

" " " "

83

55

Mar 31 " " "

923

1825

" " " "

84

2031

May 31 " " "

1080

1825

" " " "

86

241

July 31 " " "

919

1825

May 31 " " "

52

2158

Sept 30 " " "

9220

476

" " " "

58

75

" " " "

1870

476

" " " "

80

1437

" " " "

1745

476

" " " "

79

1745

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1745

476

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80

1745

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1745

476

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56

1745

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1745

476

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96

1825

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1825

476

" " " "

91

1825

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1825

476

" " " "

111

1825

" " " "

1825

476

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136

1825

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1825

476

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200

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1825

476

See Entry PROG, SLA NUMBER 01 - 000000, 0.

Sheet No.

Name _____

Address

General Efficiency Book

4-10-3

£347.3

Nov 30 1894

Heather

1794 Nov 30 16 Eds and 16 lbs 10 sh 10 p

11/2

100

117	145690	Feb 29	11026	66208
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Jan 21

[illegible]

1.6	18.7000
39	622

July 29

[View all posts by](#) [Boris Vukobratovic](#)

148	27215								
92	283								

Mar 31

2017 年 12 月 15 日 星期五 15:00

126	63.155			
35	50			

7-12-1941

119 18 173656

May 21

$$\frac{1}{n} \rightarrow 0$$

16 27 4 58 26 0 72

June 20

DOI: 10.1002/anie.201500000

[illegible]

July 31

Pr

[illegible]

43	✓	25
132	✓	15780

		1678674	
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Sheet No. _____

Name _____

Address _____

Sheet No. 52

Name _____

Address _____

L. Greenberg LHM for

1911		1911	
Feb 28 To Voucher	104.	03 Feb 28 By LHM. Aug. 3542	03
May 31 " "	117.	19 May 31 " " "	19
Aug 31 " "	117.	25 Aug 31 " " "	25
Sept 30 " "	59	30 Sept 20 " " "	30
Oct 31 " "	112	17 Oct 21 " " "	17
Dec 29 " "	144	03 Dec 29 " " "	03
		159	159

1912		Glass Time #3229	
Feb 29 To LHM by	121	1500 Feb 22 By 3229 LHM	1500
Apr 30 " LHM by	140	1349 Apr 30 By 3229 LHM	1349
May 31 " "	112	1110 May 31 " " "	1110
June 30 " "	128	588 June 20 " " "	588

Sheet No. 103Name
Address

Greenhouse

No 3098

Sheet No. _____

Name
AddressGeneral Efficiency Book
25722

104

1912	Sept 30 To Cash	121	78.50	1912	Sept 30 To E. Sur	65.29	78.50
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1912	Jan 30 To Cash	121	8.25	1912	Jan 30 To E. Sur	49.26	125
1912	Jan 31 " "	155	12.25	1912	Jan 31 " "	69.00	270.00

Class Notes & 2019

General Notes Co L.M.

1912	Jan 31 To Cash	151	14.50	1912	Jan 31 To E. Sur	74.24	151
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1912	Sept 30 To Cash	90	25.09	1912	Sept 30 To E. Sur	91.83	25.09
1912	Sept 30 " "	28	90	1912	Sept 30 " "	92.82	59.17
1912	Sept 31 " "	95	56.17	1912	Sept 31 " "	93.72	46.25
1912	Sept 31 " "	107	57.80	1912	Sept 31 " "	94.66	51.80
1912	Sept 31 " "	109	57.80	1912	Sept 31 " "	95.58	62.57
1912	Sept 31 " "	155	64.07	1912	Sept 31 " "	96.46	62.50
1912	Sept 31 " "	158	65.00	1912	Sept 31 " "	97.10	62.55
1912	Sept 27 " "	30	42.5	1912	Sept 31 " "	98.46	62.55
1912	Sept 31 " "	117	57.80	1912	Sept 31 " "	99.05	62.55
1912	Sept 31 " "	77	57.80	1912	Sept 31 " "	100.21	62.55
1912	Sept 31 " "	171	65.05	1912	Sept 31 " "	100.21	62.55
1912	Sept 31 " "	70	20.50	1912	Sept 31 " "	100.21	62.55
1912	Sept 31 " "	55	59.66	1912	Sept 31 " "	100.21	62.55
1912	Sept 31 " "	55	59.66	1912	Sept 31 " "	100.21	62.55

1912	Sept 30 To Cash	16	20	1912	Sept 30 To E. Sur	97.05	20
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Grid Sheet for Submarine 1912

1912	Sept 30 To Cash	252	16.73	1912	Sept 30 To E. Sur	99.05	15.23
1912	Sept 31 " "	293	17.0	1912	Sept 31 " "	100.8	12.0

Name _____
Address _____

East analytical Experiment

1890		1891		1892		1893	
Mayor	December	155	6th	May 31	E. S. L. L.	10001	6045
"	"	44	"	"	"	10092	6045
"	"	55	31	June 30	"	10100	1764
"	"	189	"	July 31	"	10117	1764
"	"	793	"	August 31	"	10129	185
June 30	"	48	7th	Oct 31	"	10141	1816
"	"	168	"	Nov 30	"	10152	1816
"	"	251	795	"	"	10162	1816
July 31	"	256	174	"	"	10172	1816
Aug 31	"	271	682	"	"	10182	1816
Oct 31	"	35	11	"	"	10192	1816
"	"	86	50	"	"	10202	1816
"	"	165	10	"	"	10212	1816
"	"	177	1736	"	"	10222	1816
Nov 30	"	18	245	"	"	10232	1816

Alas! - Paragon Drill Hole

Page	Page
Gift 20 Ym. 100	Gift 20 Ym. 100 100 100

Year 1485

¹⁹¹⁶	¹⁹¹⁷	¹⁹¹⁸	¹⁹¹⁹	¹⁹²⁰	¹⁹²¹	¹⁹²²	¹⁹²³	¹⁹²⁴	¹⁹²⁵	¹⁹²⁶	¹⁹²⁷	¹⁹²⁸	¹⁹²⁹	¹⁹³⁰	¹⁹³¹	¹⁹³²	¹⁹³³	¹⁹³⁴	¹⁹³⁵	¹⁹³⁶	¹⁹³⁷	¹⁹³⁸	¹⁹³⁹	¹⁹⁴⁰	¹⁹⁴¹	¹⁹⁴²	¹⁹⁴³	¹⁹⁴⁴	¹⁹⁴⁵	¹⁹⁴⁶	¹⁹⁴⁷	¹⁹⁴⁸	¹⁹⁴⁹	¹⁹⁵⁰	¹⁹⁵¹	¹⁹⁵²	¹⁹⁵³	¹⁹⁵⁴	¹⁹⁵⁵	¹⁹⁵⁶	¹⁹⁵⁷	¹⁹⁵⁸	¹⁹⁵⁹	¹⁹⁶⁰	¹⁹⁶¹	¹⁹⁶²	¹⁹⁶³	¹⁹⁶⁴	¹⁹⁶⁵	¹⁹⁶⁶	¹⁹⁶⁷	¹⁹⁶⁸	¹⁹⁶⁹	¹⁹⁷⁰	¹⁹⁷¹	¹⁹⁷²	¹⁹⁷³	¹⁹⁷⁴	¹⁹⁷⁵	¹⁹⁷⁶	¹⁹⁷⁷	¹⁹⁷⁸	¹⁹⁷⁹	¹⁹⁸⁰	¹⁹⁸¹	¹⁹⁸²	¹⁹⁸³	¹⁹⁸⁴	¹⁹⁸⁵	¹⁹⁸⁶	¹⁹⁸⁷	¹⁹⁸⁸	¹⁹⁸⁹	¹⁹⁹⁰	¹⁹⁹¹	¹⁹⁹²	¹⁹⁹³	¹⁹⁹⁴	¹⁹⁹⁵	¹⁹⁹⁶	¹⁹⁹⁷	¹⁹⁹⁸	¹⁹⁹⁹	²⁰⁰⁰	²⁰⁰¹	²⁰⁰²	²⁰⁰³	²⁰⁰⁴	²⁰⁰⁵	²⁰⁰⁶	²⁰⁰⁷	²⁰⁰⁸	²⁰⁰⁹	²⁰¹⁰	²⁰¹¹	²⁰¹²	²⁰¹³	²⁰¹⁴	²⁰¹⁵	²⁰¹⁶	²⁰¹⁷	²⁰¹⁸	²⁰¹⁹	²⁰²⁰	²⁰²¹	²⁰²²	²⁰²³	²⁰²⁴	²⁰²⁵	²⁰²⁶	²⁰²⁷	²⁰²⁸	²⁰²⁹	²⁰³⁰	²⁰³¹	²⁰³²	²⁰³³	²⁰³⁴	²⁰³⁵	²⁰³⁶	²⁰³⁷	²⁰³⁸	²⁰³⁹	²⁰⁴⁰	²⁰⁴¹	²⁰⁴²	²⁰⁴³	²⁰⁴⁴	²⁰⁴⁵	²⁰⁴⁶	²⁰⁴⁷	²⁰⁴⁸	²⁰⁴⁹	²⁰⁵⁰	²⁰⁵¹	²⁰⁵²	²⁰⁵³	²⁰⁵⁴	²⁰⁵⁵	²⁰⁵⁶	²⁰⁵⁷	²⁰⁵⁸	²⁰⁵⁹	²⁰⁶⁰	²⁰⁶¹	²⁰⁶²	²⁰⁶³	²⁰⁶⁴	²⁰⁶⁵	²⁰⁶⁶	²⁰⁶⁷	²⁰⁶⁸	²⁰⁶⁹	²⁰⁷⁰	²⁰⁷¹	²⁰⁷²	²⁰⁷³	²⁰⁷⁴	²⁰⁷⁵	²⁰⁷⁶	²⁰⁷⁷	²⁰⁷⁸	²⁰⁷⁹	²⁰⁸⁰	²⁰⁸¹	²⁰⁸²	²⁰⁸³	²⁰⁸⁴	²⁰⁸⁵	²⁰⁸⁶	²⁰⁸⁷	²⁰⁸⁸	²⁰⁸⁹	²⁰⁹⁰	²⁰⁹¹	²⁰⁹²	²⁰⁹³	²⁰⁹⁴	²⁰⁹⁵	²⁰⁹⁶	²⁰⁹⁷	²⁰⁹⁸	²⁰⁹⁹	²¹⁰⁰	²¹⁰¹	²¹⁰²	²¹⁰³	²¹⁰⁴	²¹⁰⁵	²¹⁰⁶	²¹⁰⁷	²¹⁰⁸	²¹⁰⁹	²¹¹⁰	²¹¹¹	²¹¹²	²¹¹³	²¹¹⁴	²¹¹⁵	²¹¹⁶	²¹¹⁷	²¹¹⁸	²¹¹⁹	²¹²⁰	²¹²¹	²¹²²	²¹²³	²¹²⁴	²¹²⁵	²¹²⁶	²¹²⁷	²¹²⁸	²¹²⁹	²¹³⁰	²¹³¹	²¹³²	²¹³³	²¹³⁴	²¹³⁵	²¹³⁶	²¹³⁷	²¹³⁸	²¹³⁹	²¹⁴⁰	²¹⁴¹	²¹⁴²	²¹⁴³	²¹⁴⁴	²¹⁴⁵	²¹⁴⁶	²¹⁴⁷	²¹⁴⁸	²¹⁴⁹	²¹⁵⁰	²¹⁵¹	²¹⁵²	²¹⁵³	²¹⁵⁴	²¹⁵⁵	²¹⁵⁶	²¹⁵⁷	²¹⁵⁸	²¹⁵⁹	²¹⁶⁰	²¹⁶¹	²¹⁶²	²¹⁶³	²¹⁶⁴	²¹⁶⁵	²¹⁶⁶	²¹⁶⁷	²¹⁶⁸	²¹⁶⁹	²¹⁷⁰	²¹⁷¹	²¹⁷²	²¹⁷³	²¹⁷⁴	²¹⁷⁵	²¹⁷⁶	²¹⁷⁷	²¹⁷⁸	²¹⁷⁹	²¹⁸⁰	²¹⁸¹	²¹⁸²	²¹⁸³	²¹⁸⁴	²¹⁸⁵	²¹⁸⁶	²¹⁸⁷	²¹⁸⁸	²¹⁸⁹	²¹⁹⁰	²¹⁹¹	²¹⁹²	²¹⁹³	²¹⁹⁴	²¹⁹⁵	²¹⁹⁶	²¹⁹⁷	²¹⁹⁸	²¹⁹⁹	²²⁰⁰	²²⁰¹	²²⁰²	²²⁰³	²²⁰⁴	²²⁰⁵	²²⁰⁶	²²⁰⁷
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Hopner G. B.	50	Hopkins J. C. & M.	103
Labor & Material for		Housekeeping Center	56
Merlet Emil		Cyphering	\$323
Labor & Material for	50	Hoyt & Mang J. & M.	104
Shawms St. J.		Highway Location	\$3
Labor & Mat'l for	51	Hard Knuckle Blag	\$25
Hardening Waz	\$20	Hardwood Paper Blag	\$37
Holland P. W. C.		Hardwood Paper Blag	\$105
Labor & Mat'l for	51	Hornet L. H.	57
Hornbaum C.		Hornet L. H.	57
Labor & Mat'l for	50	Hornet L. H.	57
Hard Rubber Rings	\$26	Hard Rubber	\$37
Hardening pieces on	3	Hard Rubber	\$37
Back for Salt Machine	\$27	Hard Rubber	\$37
Heat Range to	4	Hardening Job	\$38
produced Vapor	\$28	Hardening Job	\$38
Subst to fit into set	5		\$40
Spreading for 28 ft. range	\$11		\$40
David G. M.			
R. & M. for	52		
Hopkins M. C.			
R. & M. for	53		
Home Model Kineto	\$21		
Hamber Dressel			
Labor & Mat'l for	53		
Holden Deloz			
L. & M.	7		
Harper J.			
L. & M.	54		
Hand Shaping Mach.	8		
for Busch Home Records	\$25		
Harper Blag			
L. & M.			
Harold for Signal Box	\$25		
Hartshorn M. R.	\$100		
Holdenman M. R.	\$100		
Heating Plans	\$26		
House Lighting	\$27		
Home P. K. Machine	\$26		
Harper	\$26		
Harper J. L. & M.	101		
House Lighting	\$30		
Harper Products	12		
Hypocrite Dept	\$13		
Hudson, Rumbach	\$9		
Halogen Products	\$20		
Heater - Best	\$33		
Holdenman W. & M.	102		
Heating	\$36		
House Log Store	100		
Controller, Calculator	\$28		

Sheet No. _____

Name
AddressHome PK Machine
#2909

1924		1925		1926	
May 31	Bought Edward Couch	6157.21	May 31	Bought Edward Couch	6157.21
	103	4.54		"	1786
	105	90		"	7899
	107	156.30		"	7141
	115	145.74		"	725.8
June 30	"	110.53		"	734.02
	27	10		"	735.26
	71	22		"	735.26
	91	40		"	735.26
	94	157.53		"	735.26
July 31	"	223		"	735.26
	38	250		"	735.26
	135	11		"	735.26
	136	13.86		"	735.26
Aug 30	"	79		"	735.26
	80	09		"	735.26
	81	44		"	735.26
	87	11.25		"	735.26
	89	23		"	735.26
	90	136.93		"	735.26
Sept 30	"	25		"	735.26
	28	73.39		"	735.26
Oct 31	"	41		"	735.26
	44	17.50		"	735.26
	99	18		"	735.26
	113	10		"	735.26
	115	78.61		"	735.26
Nov 30	"	67		"	735.26
	100	17		"	735.26
	106	3060		"	735.26
	109	73.45		"	735.26
Dec 31	"	134		"	735.26
	152	12.25		"	735.26
July 28	"	147		"	735.26
	116	177.71		"	735.26
	117	71.55		"	735.26

Sheet No. _____

Name _____

Address _____

Sheet No. 11

Name _____

Address _____

House Lighting Ltr # 3011

1911		1912		1913			
April 30	To Voucher	52	584	April 30	By Cash on Inv	584	15551
" "	" "	99	249	May 31	" " "	583	12961
" "	" "	142	142	July 31	" " "	620	25778
May 31	" "	99	15753	July 31	" " "	6173	25779
" "	" "	140	12828	July 31	" " "	6115	14244
" "	" "	145	11876	Aug 30	" " "	6459	13571
June 29	" "	99	5823	Oct 31	" " "	6601	31685
July 31	" "	122	988	Nov 30	" " "	6718	22651
" "	" "	140	76	Dec 31	" " "	6806	17226
" "	" "	142	21851	Jan 31	" " "	6906	12543
" "	" "	90	81131	Feb 28	" " "	7008	16943
Aug 31	" "	125	125				
" "	" "	129	22419				
Sept 30	" "	87	87				
" "	" "	121	587				
Oct 31	" "	81	48835				
" "	" "	97	190				
" "	" "	109	150				
Nov 30	" "	119	31537				
" "	" "	86	661				
" "	" "	122	661				
Dec 31	" "	115	32726				
" "	" "	91	2251				
" "	" "	155	169631				
1913	" "	154	11140				
Jan 31	" "	118	115				
" "	" "	119	89				
" "	" "	53	400				
" "	" "	122	50				
" "	" "	143	235				
" "	" "	155	13463				
Feb 28	" "	89	160				
" "	" "	124	1883				
			18300				
							18300
1913		1913		1913			
Mar 31	To Voucher	120	1526	Mar 31	By Cash on Inv	7201	15261
Apr 30	" "	140	1149	Apr 30	" " "	7223	445
June 30	" "	42	307	June 30	" " "	7581	307
Aug 30	" "	116	283	Aug 31	" " "	7156	2831

Address

Address	Exp
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Halogen Products Co. #3041
Experimental work Year ending Feb 28-1913.

20

✓✓✓

898
1443

Table 1

1

1	1	2	4	3
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Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____
Address _____

M. R. Hutchinson LVM

16

Sept 30	To Balance	163.00	Sept 30	By L. M. Linn	80.00	178.10
"	"	71	"	Oct 31	"	3.40
"	"	71	"	Nov 30	"	5.66
"	"	44	"	Dec 31	"	11.06
"	"	76	"	Jan 31	"	12.54
"	"	97	"	Feb 28	"	10.06
"	"	109	"	Mar 31	"	17.25
Oct 31	"	19	"	Apr 30	"	11.33
"	"	60	"	May 31	"	19.25
"	"	78	"	June 30	"	90.19
"	"	111	"	"	"	115.97
"	"	122	"	"	"	5.73
Nov 30	"	139	"	"	"	2.10
"	"	114	"	"	"	3.36
Dec 31	"	127	"	"	"	1.43
"	"	146	"	"	"	6.77
"	"	150	"	"	"	1.47
"	"	156	"	"	"	33.81
1894	"	16.25	"	"	"	28.47
Jan 31	"	41	"	"	"	21
"	"	68	"	"	"	50
"	"	113	"	"	"	40
"	"	153	"	"	"	29.66
"	"	172	"	"	"	30.11
"	"	177	"	"	"	32.48
Feb 28	"	28	"	"	"	3.41
"	"	29	"	"	"	1.78
"	"	43	"	"	"	0.41
"	"	102	"	"	"	6.39
"	"	134	"	"	"	13.44
Mar 31	"	45	"	"	"	17.15
"	"	89	"	"	"	2.3
"	"	91	"	"	"	2.2
"	"	102	"	"	"	1.80
"	"	106	"	"	"	27.27
Apr 30	"	39	"	"	"	1.25
"	"	50	"	"	"	19.7
"	"	51	"	"	"	23.2
"	"	54	"	"	"	1.14
"	"	72	"	"	"	13.5
"	"	77	"	"	"	7.50
"	"	97	"	"	"	2.12
"	"	105	"	"	"	2.1
"	"	116	"	"	"	20.17
"	"	97	"	"	"	3.16
"	"	32	"	"	"	41.25
"	"	88	"	"	"	3.7
"	"	98	"	"	"	5.00
"	"	99	"	"	"	12.4
"	"	106	"	"	"	1.83
"	"	115	"	"	"	26.22
"	"	40	"	"	"	77.08
June 30	"	41	"	"	"	6.3

Sheet No. 55

Name _____

Address _____

M. R. Hutchinson Lm

1911		1911		1911	
May 31 To Voucher	111	79	May 31 By Lm Inv	4151	539
June 30	117	46	June 30	4235	3115
July 31	25	00	July 31	4498	2290
Aug 31	118	31	Aug 31	4654	3968
Sept 30	59	35	Sept 30	4824	1354
Oct 31	104	40	Oct 31	4946	1354
Nov 30	111	19	Nov 30	5101	1710
Dec 31	74	00	Dec 31	5230	1769
	115	25			1829
	120	28			1854
	124	69			
	126	73			
	103	21			
	108	67			
	110	73			
	11	11			
	63	77			
	112	1491			
	113	1547			
	64	50			
	117	67			
	119	1547			
	63	46			
	115	21			
	120	2361			
		18545			18545

M. R. Hutchinson

1912		1912		1912	
Jan 30 To Voucher	10	510	Jan 31 By Lm Inv	5377	1947
Feb 29	138	1479	Feb 29	5514	1257
Mar 30	15	360	Mar 30	5676	3267
Apr 30	144	5897	Apr 30	5717	3267
May 31	127	363	May 31	5965	4631
June 30	78	260	June 30	6114	5266
July 31	136	20	July 31	6277	5266
Aug 31	142	477	Aug 31	6452	5266
Sept 30	133	180	Sept 30	6542	11442
Oct 31	140	1597	Oct 31	6677	12027
Nov 30	68	1354	Nov 30	6702	12027
Dec 31	145	1556			
Jan 31	134	360			
Feb 29	144	9757			
Mar 30	148	3717			
Apr 30	123	123			
May 31	137	1354			
June 30	118	140			
July 31	119	144			
Aug 31	121	119			
Sept 30	67	202			
Oct 31	106	125			
Nov 30	129	1015			
Dec 31	82	10			
	83	100			
	120	1000			
		14159			14159

Sheet No. _____

Name _____

Address _____

M. R. Hutchinson Lm

1912		1912		1912	
Mar 31 To Voucher	116	111	Mar 31 By Lm Inv	7791	549
Apr 30	117	76	Apr 30	7812	5533
May 31	118	50	May 31	7926	610
June 30	120	250	June 30	7950	3537
July 31	135	160	July 31	7954	1047
Aug 31	137	350	Aug 31	7959	549
Sept 30	140	4533	Sept 30	7958	3537
Oct 31	137	670			
Nov 30	138	150			
Dec 31	144	458			
	19	275			
	107	50			
	117	40			
	118	30			
	123	477			
	120	1075			
	33	438			
	125	84			
	127	29			
	83	157			
	47	160			
	166	395			
	107	50			
	111	595			
	116	1654			

House Digging Controller Cabinets

1912		1912		1912	
Apr 30 To Voucher	110	558	Apr 30 By Lm Inv	7991	558
May 31	97	118	May 31	7919	118

Sheet No. _____

Name _____

Address _____

Sheet No. 100

Name _____

Address _____

Handles for special signal Boxes #2380

1911	apl 30 To Voucher	113	73	1911	apl 30 By the Bldg Ins 5850	218
	" " "	114	115			
			517			311

J. Holdermann Lfny

1911	June 30 To Voucher	63	1911	June 30 By the Bldg Ins 5552	84
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Heating Plant (Change) #2675

1911	Dec 31 To Voucher	89	12.80	1912	Jan 30 By the Bldg Ins 224	7431
	" " "	112	41.35			
	" " "	115	517			
	Nov 30	117	600			
	" " "	117	549			
			7431			7431

Sheet No. 101Name
Address

Hopper (steel) - 1- #2875

1911	1912	1913	1914	1915
July 31 To Voucher	127	438	July 31 To Voucher	138
July 31 To Voucher	127	292	July 31 To Voucher	292
		781		781

J. Harper LTM

1911	1912	1913	1914	1915
July 31 To Voucher	127	438	July 31 To Voucher	138
July 31 To Voucher	127	292	July 31 To Voucher	292
		781		781

Hopper "Bore" #3027

1911	1912	1913	1914	1915
July 31 To Voucher	127	438	July 31 To Voucher	138
July 31 To Voucher	127	292	July 31 To Voucher	292
		781		781

Sheet No. 102Name
Address

Wm. Holderness LTM

1911	1912	1913	1914	1915
July 31 To Voucher	127	438	July 31 To Voucher	138
July 31 To Voucher	127	292	July 31 To Voucher	292
		781		781

Hopper #3063

1911	1912	1913	1914	1915
July 31 To Voucher	127	438	July 31 To Voucher	138
July 31 To Voucher	127	292	July 31 To Voucher	292
		781		781

M.P. Hutchinson LTM

1911	1912	1913	1914	1915
July 31 To Voucher	127	438	July 31 To Voucher	138
July 31 To Voucher	127	292	July 31 To Voucher	292
		781		781

Sheet No. _____

Name _____

Address _____

Looffer Guards
#3287

1913		1913		1913	
Sept 30	To Lumber	109	120	Sept 30	By L.S.B. Co. Inv 7990
				420	

1913		1913		1913	
Nov 30	To Lumber	141	333	Nov 30	By L.S.B. Co. Inv 8778
				333	

1913		1913		1913	
May 30	To Lumber	141	145	May 30	By L.S.B. Co. Inv 8778
May 31	"	115	58	May 31	" " " 8730

Sheet No. _____

Name _____

Address _____

Hard Rubber
12/29

1913		1913		1913	
Sept 30	Lumber	95	1126	Sept 30	By L.S.B. Co. Inv 9311
					1126

1914		1914		1914	
Sept 30	Lumber	95	3076	Sept 30	By L.S.B. Co. Inv 7311
Oct 31	"	111	110	Oct 31	" " " 9246
					110

1915		1915		1915	
July 27	Lumber	9	1071	July 27	By L.S.B. Co. Inv 9224
	"	75	248	Nov 31	" " " 9247
	"	100	44		
	"	70	50		
	"	131	1024		
	"	171	4194		

Sheet No. _____

Name _____

Address _____

Installing New Printing & Dark Room in Subanometer Room
#3618

1911

Jan 31	Banker	68	701	Dr 31. By General Expense 307	7751
"	"	126	10		
"	"	127	2063		
July 28	"	55	1701		
"	"	131	3551		

1912

Installing Printing System & Change Light in 1912 March 1912

Oct 31	Banker	115	880	Oct 31. Ed B Co. Inv. 9413	7467
			6687		

Sheet No. _____

Name _____

Address _____

Installation, Maintenance & Repair of Batteries
for Elementary Lighting #3554

Apr 30	Wm. L. Lumber	40	357
"	"	68	501
"	"	74	1111
"	"	75	3268
July 31	"	14	1344
Aug 31	"	36	4344
Nov 30	"	36	1371
Mar 31	"	50	1345

Installation of Machinery #3554

Apr 30	Lumber	202	30838	Apr 30	Electric B. Co. Ltr	9943	30838
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Sheet No. 102

Name _____

Address _____

R. D. Ogleson Ltr

1912	Apr 30	Lumber	145	1912	Apr 30	Electric B. Co. Ltr	9943	30838
------	--------	--------	-----	------	--------	---------------------	------	-------

Iron Loading Machine #3217

1913	Jan 31	To Lumber	150	1913	Jan 31	Invoice	6957	9334
1913	Feb 28	"	124	1913	Feb 28	Electric B. Co. Ltr	9971	3296
1913	Mar 31	To Lumber	120	1913	Mar 31	Electric B. Co. Ltr	9971	3296
1913	Apr 30	"	140	1913	Apr 30	"	9971	3296

Iron Loading #3229

1913	Jan 31	To Lumber	150	1913	Jan 31	Invoice	6957	9334
1913	Feb 28	"	124	1913	Feb 28	Electric B. Co. Ltr	9971	3296
1913	Mar 31	To Lumber	120	1913	Mar 31	Electric B. Co. Ltr	9971	3296
1913	Apr 30	"	140	1913	Apr 30	"	9971	3296

Sheet No.

Name
Address

Installation of Electrical Head Tail Sides Light 1st Car
8/10/21

⁷⁹⁵					⁷⁹⁶	
Dec 31	Chester	18 25 226	3400 275 1403	Dec 31	Edition Bureau National 10/706	5481

Mr. Loring 2.7.77

Dec 31	217	26 Dec 31	2411 Dr	10794	26
--------	-----	-----------	---------	-------	----

Johnson A.	50.
Labov & matt for	}
Jenkins A. B.	
Labov & matt for	50.
Jacob & Jos.	}
Labov & matt for	
Jarmann J.	100.
L & M. for	100.
Jib Crane	\$ 228 ⁵¹
Jacob Oscar Lom.	100.
Johnston Operating	101

Sheet No. 100

Name
Address

Joseph Jacoby Lm.

1907

Oct 10 To Voucher

53

1909

Oct 20 By Lm. Inv

115

75

J. Jarman Lm.

1910

Jan 31 To Voucher

115

1910

Jan 31 By Lm. Inv

1761

20

Oct 31 " Invoice

2526

Oct 31 " Voucher

96

20

Oscar Jacoby Lm.

1911

Jan 31 To Voucher

62

1911

May 31 By Lm. Inv

415

110

Jan 31 " " " "

145

June 27 " " " "

612

32

Oct 30 To Voucher

152

1913

Oct 30 " Lm. Inv

722

146

Oct 31 " " " "

12

Oct 31 " " " "

5163

96

Oct 30 " " " "

3

Oct 30 " " " "

9959

24

Nov 31 " " " "

53

Nov 31 " " " "

1157

93

119

40

Sheet No. _____

Name _____

Address _____

Johnston Pharmacy

1911

June 30. *Donner* 133.

July 31. " 167.

Aug 31. " 211.

Sept 31. " 172.

Oct 31. " 70.

Nov 31. " 113.

Dec 31. " 117.

1911 31. " 140.

1912 31. " 100.

1913 31. " 101.

1914 31. " 102.

1915 31. " 103.

1916 31. " 104.

1917 31. " 105.

1918 31. " 106.

1919 31. " 107.

1920 31. " 108.

1921 31. " 109.

1922 31. " 110.

1923 31. " 111.

1924 31. " 112.

1925 31. " 113.

1926 31. " 114.

1927 31. " 115.

1928 31. " 116.

1929 31. " 117.

1930 31. " 118.

1931 31. " 119.

1932 31. " 120.

1933 31. " 121.

1934 31. " 122.

1935 31. " 123.

1936 31. " 124.

1937 31. " 125.

1911

June 30. *Donner* 133.

July 31. " 167.

Aug 31. " 211.

Sept 31. " 172.

Oct 31. " 70.

Nov 31. " 113.

Dec 31. " 117.

1911 31. " 140.

1912 31. " 100.

1913 31. " 101.

1914 31. " 102.

1915 31. " 103.

1916 31. " 104.

1917 31. " 105.

1918 31. " 106.

1919 31. " 107.

1920 31. " 108.

1921 31. " 109.

1922 31. " 110.

1923 31. " 111.

1924 31. " 112.

1925 31. " 113.

1926 31. " 114.

1927 31. " 115.

1928 31. " 116.

1929 31. " 117.

1930 31. " 118.

1931 31. " 119.

1932 31. " 120.

1933 31. " 121.

1934 31. " 122.

1935 31. " 123.

1936 31. " 124.

1937 31. " 125.

1911

June 30. *Donner* 133.

July 31. " 167.

Aug 31. " 211.

Sept 31. " 172.

Oct 31. " 70.

Nov 31. " 113.

Dec 31. " 117.

1911 31. " 140.

1912 31. " 100.

1913 31. " 101.

1914 31. " 102.

1915 31. " 103.

1916 31. " 104.

1917 31. " 105.

1918 31. " 106.

1919 31. " 107.

1920 31. " 108.

1921 31. " 109.

1922 31. " 110.

1923 31. " 111.

1924 31. " 112.

1925 31. " 113.

1926 31. " 114.

1927 31. " 115.

1928 31. " 116.

1929 31. " 117.

1930 31. " 118.

1931 31. " 119.

1932 31. " 120.

1933 31. " 121.

1934 31. " 122.

1935 31. " 123.

1936 31. " 124.

1937 31. " 125.

Kopp Jr Paul

Labor & Matl for } 100

Kreile B. } 100

Labor & Matl for } 100

Kinetoscope } 1

Phonograph } 1

Kinetoscope } 2

Motor Drive } 2

Kibin to burn time } 2

Kinetophone } 2

Key-way E. } 2

Kobin Smith R. S. } 2

Kobin & Son } 2

Kobin J. } 2

Kobin } 2

Kobin } 2

Kobin } 2

Kobin } 2

Kobin } 2

Kobin } 2

Kobin } 2

Kobin } 2

Kobin } 2

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Kobin } 2

Kobin } 2

Kobin } 2

Kobin } 2

Sheet No. _____

Name _____

Address _____

Work On Kinetophone #2435

1911
June 30

Lumber

5

June 30

By T.H.B. Inc. Inc.

8976

3211711

July 31

29

July 31

"

9080

24418

August 31

166

August 31

"

9154

15819

September 30

34

September 30

Lumber

9246

127105

October 31

35

October 31

"

43

2400

November 30

38

November 30

By T.H.B. Inc. Inc.

9350

1863

December 31

89

December 31

"

9414

1971

January 31

116

January 31

"

9506

2181

February 28

166

February 28

"

9760

290

March 31

56

March 31

"

11791

April 30

78

April 30

"

17241

May 31

79

May 31

"

26051

June 30

80

June 30

"

10856

July 31

90

July 31

"

11119

August 31

90

August 31

"

701

September 30

91

September 30

"

28

October 31

95

October 31

10796

13385

November 30

113

November 30

"

164

December 31

115

December 31

3084

14463

January 31

21

January 31

"

921

February 28

67

February 28

"

100

March 31

126

March 31

"

451

April 30

152

April 30

"

2431

May 31

117

May 31

"

2901

Sheet No. _____

Name _____

Address _____

Sheet No. 100

Name _____

Address _____

Paul Kopp Jr

1908
Sept 30 To Voucher 96 1908
Sept 30 By L & M Jones 428 30

S Knile

1909	June 30 To Voucher	84	1909	June 30 By L & M Jones	1162	33
July 31	" "	108	July 31	" "	1250	45
Aug 31	" "	108	Aug 31	" "	1240	26
Sept 31	" "	103	Sept 31	" "	1928	32
Oct 31	" "	115	Oct 31	" "	1984	16
Nov 30	" "	90	Nov 30	" "	2219	13
						178

Key-Way Etc

2624

1911	Sept 30 To Voucher	105	1911	Sept 30 By E. B. Jones	1050	1050
		109				
						1050

Sheet No. 101

Name
Address

R. S. Kornbluth Lom

Sheet No. 102

Name
Address

Knives #3068

1911		1911		
Mar 30 To Voucher	23	115	Mar 30 By Lom Inv 556	115
Jan 31 " "	31	67	Jan 31 " " 558	67
		182		182

E. Kolser Lom

1912		1912		
July 29 To Voucher	148	29	July 29 By Lom Inv 551	29
Feb 28 " "	40	100	July 28 " " 516	100
		180		180
Apr 30 To Voucher	116	20	Apr 30 By Lom Inv 558	20

J. Klauke

1912		1912	
Mar 30 To Voucher	127	47 Mar 30 By L & M. Inv	563
June 29 " "	30	77 June 29 " " "	612
		124	124

1912			1912		
Aug 31 To Voucher	129	9.55	Aug 31 By B.S.B.G.	6391	9.55

A. M. Kennedy

July 31	To Voucher	125	60	July 31	By L.M. Inv	7829	60
Oct 31	" "	117	24	Oct 31	" " "	8164	24
Apr 30	" "	137	60	Apr 30	" " "	8290	60
May 31	" "	55	800	May 31	" " "	8410	331
Dec 31	" "	160	31	Dec 31	" " "	8584	41
1915	" "	11	61	June 30	" " "	10198	61
May 31	" "	167	61	May 31	" " "	11505	100
1916	" "	100					

Key Link Mill Rd

July 31	Voucher	148	3930	July 31	Edwin Thine Thine	10883	3930
July 29	"	176	4846	July 29	"	10977	4846

Large black & light blue tail red
1127

1976				1976					
Mar	31	Lower	119	98	Mar	31	3.25% Cont. Maint	110.1	98
Apr	30	"	94	78.8	Apr	30	" " "	110.4	78.8
May	31	"	151.8	336.8	May	31	" " "	113.1	336.8

[illegible]

Shoot No. 12Name
Address

Lantern slides # 2843

1911			1912				
Jan 11	20	Omaha	138	Jan 21	Ap. La. E. Chalmers	529	500
Feb 1	25	Adams	37	Mar 1	By T. B. Smith	7247	15811
Mar 1	1	Do Omaha	41	Apr 20	" " "	7372	36
"	"	"	105	May 31	" " "	7494	1548
"	"	"	120	Apr 20	" " "	7607	6751
Apr 30	"	"	140	Sept 30	" " "	8061	1029
May 31	"	"	140				
June 20	"	"	170				
Sept 30	"	"	109				

Sheet No.

Name
AddressL.M.'s make's Experimental Edison Seizing Machines
13468

1897		1898		1899	
Sept 30	Brought Forward	1065	107	Sept 30	Brought Forward
Oct 31	"	115	130	Oct 31	Edison's Seizing Machine
Nov 30	"	109	1093	Nov 30	"
Dec 31	"	116	115	Dec 31	"
			107	July 28	"
			1065		9770
			1065		1065

Sheet No.

Name
AddressL.M. Maintaining Storage Batteries
13908

1897		1898		1899	
Jan 31	Brought Forward	127	1035	Jan 31	Brought Forward
Feb 28	"	134	1390	Feb 28	"
			1390	July 28	"
			1390		1390
			1390		1390

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

L. T. M. to Build Printing Machine

F3236

15

1911		1911		1911		1911	
Jan 31	127	2625	Jan 31	178	2625	2625	2625
Feb 28	131	141	Feb 28	178	141	141	141
Mar 31	10	150	Mar 31	178	150	150	150
"	116	07	Apr 30	178	07	07	07
"	106	200	May 31	178	200	200	200
Apr 30	13	161	Jun 30	178	161	161	161
"	13	650	Jul 31	178	650	650	650
"	16	1118	Aug 30	178	1118	1118	1118
"	93	216	Sep 30	178	216	216	216
"	102	117	Nov 30	178	117	117	117
May 31	116	374	Dec 31	178	374	374	374
"	89	50			50	50	50
"	99	26			26	26	26
"	68	55			55	55	55
"	103	310			310	310	310
Jun 30	115	224			224	224	224
"	106	77			77	77	77
July 31	35	216			216	216	216
"	135	06			06	06	06
"	136	202			202	202	202
Aug 30	77	178			178	178	178
"	80	79			79	79	79
"	89	04			04	04	04
"	90	144			144	144	144
Sept 30	95	180			180	180	180
Nov 30	109	223			223	223	223
Dec 31	152	519			519	519	519

Sheet No. _____

Name
Address

Sheet No. _____

Name
AddressL. M. G. Makers Tools for Swamp Belcher
1936

16

		1936					
July 28	Voucher	28	30.16	July 28	W. E. Snodgrass	1079	62.79
"	"	29	31.23	"	"	1080	13.25
"	"	58	11	Mar 31	"	1081	13.25
"	"	90	7.70	Apr 30	"	1082	13.25
"	"	113	2.52	May 31	"	1083	13.25
"	"	134	1.04	June 30	"	1084	13.25
Mar 31	"	31	2.18	Oct 31	"	1085	13.25
"	"	46	11	Dec 31	"	1086	13.25
"	"	156	14.30				
Apr 30	"	116	107.34				
May 31	"	103	330				
"	"	125	14.50				
June 30	"	106	13.48				
Oct 31	"	41	7.73				
Dec 31	"	156	105.99				

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____L. M. for Erecting Carbonic Acid Plant
#3770

18

1924

Aug 30

Income

1

550

Aug 30

W. Edwards building

9157

108927

25

144

Oct 30

"

9281

306696

35

2016

Oct 31

"

9373

356698

38

270

47

2295

46

10

63

1944

71

88

71

14960

87

2000

Sept 30

90

24927

1

175

3

158

6

355

9

1288

10

670

22

65

24

907

25

701

26

3110

27

16213

32

1338

39

360

41

23100

44

160

47

1961

59

7308

64

1124

66

545

75

462

76

16001

87

494610

91

521

94

227279

Oct 31

8

1142

13

673

14

2000

39

2390

40

613

44

776

45

2454

46

590

47

310

48

5460

55

10313

60

643

61

161

71

2244

72

7000

76

410

81

5494

83

1822

88

1064

89

101404

91

107364

Sheet No. _____

Name _____
Address _____L & M for Erecting barbed Acid Blank
13720

1901	Month	Day	Number	13720
Oct 31	Bringing Forward		105	7251
			110	70
			113	303
			115	1825
			89	315
			90	271
			91	1120
			6	1110
			9	20750
			11	1664
			13	250
			12	760
			16	10290
			19	3500
			21	1610
			22	14077
			25	126
			26	216
			31	37100
			35	500
			39	2435
			41	5504
			46	5143
			56	14796
			57	6221
			66	56376
			67	150
			88	5124
			70	112
			80	61547
			83	207
			87	7300
			87	1233
			88	5504
			92	2150
			97	963
			100	232
			106	400
			107	207
			109	60
			109	142134
			3	1157
			1	3900
			3	1207
			90	14445
			27	130
			28	147
			32	14114
			37	2409
			40	1485
			47	5360
			48	20307
			54	1180
			139	1480

Dec 31

Sheet No. _____

Name _____
Address _____L & M for Erecting barbed Acid Blank
13720

1901	Month	Day	Number	13720
Dec 31	Bringing Forward		69	15640
			79	14468
			80	2936
			82	1600
			87	66120
			93	990
			104	3974
			107	2076
			108	5500
			111	32777
			112	110
			114	525
			115	28521
			117	563
			119	450
			120	1900
			126	306
			136	416
			137	24908
			138	10610
			139	35
			141	143126
			146	5085
			150	2274
			152	17193
			2	1157
			15	22614
			21	1650
			32	6800
			39	2200
			40	1494
			41	15377
			45	39
			46	931
			47	1588
			48	285
			49	3937
			51	27141
			53	13611
			62	77314
			70	1660
			77	14514
			78	976
			86	500
			87	2888
			89	8213
			107	600
			110	70037
			115	3300
			116	14550
			118	1520
			119	16740
			127	11009

J. J. J.

Name
Address

Name _____
Address _____

L. M. v. Corporation with the Manufacturing of Tools for
New Amherst 30 13812

19

This process may be and will be necessary in the use of Freon-filled devices. It must run with the gas.

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

22

St. M. Necessary, Repaired to Bldg. No. 1

372.0

1914

Jan 31 *Conductor* 51
Mar 31 " 47
Mar 31 " 171

1915

Jan 31 *By M. Conductor* 11.01
Mar 31 " 2.00
13.10

11.01
2.00
3.15

If any person is injured or killed in connection with the operation of this road, the person or persons so injured or killed shall be entitled to compensation as provided in the laws of the State of New York.

Address _____

Sheet No. _____

Name _____

Address

Let it be the Manufacture of Paraphenylenediamine.

1975

Jan 31 Balance from p. 110
Voucher

Feb. 27

Mar 31

Apr. 2.

May 31

June 20

1975

[illegible]

Feb 28	"	"	77.13
Mar 21	"	"	87.73
Apr 30	"	"	92.13
May 31	"	"	95.89
June 30	"	"	100.00

[illegible][illegible][illegible][illegible]

1	0	9	7	9
1	0	7	5	7
6	6	6	6	6
0	1	0	7	9
2	9	5	6	6
3	3	5	8	5
3	3	3	8	9
2	3	2	8	9
8	5	0	5	0
2	2	3	2	2

[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1990	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100											

[illegible]

This process blurs and smoothes is necessary on sheets used by Freudist devices, it must run with the grain of the paper. Sheets processed like this will not break the back and will make them much more flexible.

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

24 1943
 24 Mon Automobile for M.R. Hutchinson
 1943

1942		1943		1944		1945	
Mar 31	Lunch	6	1005	Mar 31	6, M. Hutchinson	1005	1005
Apr 30	"	80	225	Apr 30	"	9957	11565
May 31	"	157	4320	May 31	"	9957	1113
		2	50	June 30	"	10169	4406
		173	30	July 31	"	10265	908
June 30		193	3775	Aug 31	"	10344	5263
		149	172	Sept 30	"	10446	17274
July 31		237	3251	Oct 31	"	10579	38718
Aug 31		216	905	Nov 30	"	10725	48526
		79	132	Dec 31	"	10875	58556
Sept 30		221	2061	Jan 31	"	11039	69087
		175	119	Feb 29	"	11197	80176
Oct 31		200	2398	Mar 31	"	11377	91908
Nov 30		177	2686	Apr 30	"	11522	103768
		36	260	May 31	"	11588	116256
		46	15	June 31	"	11648	129576
		48	460				141176
		157	27				
Jan 31		209	5546				
Jan 31		226	54678				
		52	3377				
		93	400				
Feb 29		148	15284				
		1	100				
Mar 31		126	11926				
		26	2140				
		57	2150				
Apr 30	Voucher	119	55436				
	"	18	875				
May 31	"	96	5066				
June 30	"	125	5566				
	"	76	450				
		107	05				
July 31		106	4266				
		125	14576				
			15776				

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

54

L. L. Lumber & M.

1913
May 31 To Lumber 1201913
76 May 31 By L & M Lumber 1998

76

L & M for Repaidston Cameral # 2258

1913
May 31 To Lumber 11.00
June 30 " " 12.00
July 31 " " 11.00
" " " 12.00
" " " 12.00
" " " 12.001913
May 31 By J. A. Lumber 1998
June 30 " " " 76.00
July 31 " " " 77.00
" " " 77.00
" " " 77.00
" " " 77.008190
15482
15482
2292

Sheet No. _____

Name _____
Address _____L. F. M. To Make Forty Four Mumps Cts
#3368

1913	1913	1913	1913
May 31 To Balance 147	789	May 31 By T. B. Duane 500	789
June 30 " 40	147	June 30 " " 7669	7447
" " 74	221	July 31 " " 7778	7778
July 31 " 120	341	Aug 31 " " 7910	8150
" " 7	1050	Sept 30 " " 7136	22142
" " 127	1284	Oct 31 " " 8258	38458
" " 127	60	Nov 30 " " 8382	37741
Aug 30 " 127	5211	Dec 31 " " 8194	35710
Sept 31 " 11	315		
" " 16	537		
" " 35	341		
" " 36	222		
Nov 30 " 127	20492		
" " 6	470		
" " 47	320		
" " 45	642		
" " 49	360		
" " 79	86		
" " 137	40		
Dec 31 " 127	36535		
" " 46	257		
" " 136	186		
1914	39378		
Jan 31 " 67	014		
" " 127	36898		
	17113		

L. F. M. To Make one Hundred and Forty Four Mumps Cts
#3368

1913	1913	1913	1913
Jan 30 To Balance 147	812	Jan 31 By T. B. Duane 767	812
July 31 " 40	90	July 31 " " 7777	8757
" " 74	30	Aug 31 " " 7911	308
" " 73	81	Sept 30 " " 8020	83
Aug 31 " 129	846		
Sept 30 " 116	535		
" " 30	43		

Sheet No. _____

Name _____
Address _____L. F. M. To Cover Expenses of Making Necessary Drawing
#3808

1913	1913	1913	1913
Sept 30 To Balance 111	37000	Sept 30 To Balance 111	37000
Oct 31 " 200	12111	Oct 31 " " 10524	10524
Nov 31 " 177	750	Nov 31 " " 10524	750
Dec 31 " 700	10000	Dec 31 " " 10524	10000
Jan 31 " 706	10000	Jan 31 " " 10524	10000
Feb 31 " 8	751	Feb 31 " " 10524	10000
Mar 31 " 37	200	Mar 31 " " 10524	10000
Apr 31 " 39	1500	Apr 31 " " 10524	10000
May 31 " 70	200	May 31 " " 10524	10000
June 31 " 145	10524	June 31 " " 10524	10000
July 31 " 29	35	July 31 " " 10524	10000
Aug 31 " 30	70	Aug 31 " " 10524	10000
Sept 31 " 87	10	Sept 31 " " 10524	10000
Oct 31 " 143	14900	Oct 31 " " 10524	10000
Nov 31 " 119	15741	Nov 31 " " 10524	10000
Dec 31 " 70	200	Dec 31 " " 10524	10000
Jan 31 " 74	10524	Jan 31 " " 10524	10000
Feb 31 " 31	10524	Feb 31 " " 10524	10000
Mar 31 " 10	1600	Mar 31 " " 10524	10000
Apr 31 " 68	200	Apr 31 " " 10524	10000
May 31 " 87	10524	May 31 " " 10524	10000
June 31 " 150	10524	June 31 " " 10524	10000
July 31 " 14	10524	July 31 " " 10524	10000

L. F. M. To Cover Printing Done #3808

1913	1913	1913	1913
Apr 30 To Balance 96	40150	Apr 30 To Balance 96	40150
May 31 " 31	189	May 31 " " 11868	11868
June 30 " 135	46000	June 30 " " 11868	46189
July 31 " 36	296	July 31 " " 11868	34615
Aug 31 " 108	36687	Aug 31 " " 11868	37781
Sept 31 " 135	27781	Sept 31 " " 11868	27781

Sheet No.

Name

Address

L. M. Conrad Expenses of Making Necessary Drawings

#309

June 30	23	206	June 30	Edison Photo 1000	15.00	417.67
July 31	36	13.90	July 31	"	"	417.67
Aug 31	41	2.30				417.67
Sept 30	105	2.00				417.67
Oct 31	108	19.75				417.67
Nov 30	112	1.15				417.67
Dec 31	116	0.1				417.67
	117	2.12				417.67
	117	48.22				417.67
	120	171.30				417.67

Sheet No. 102

Name

Address

Lecture "H. H. Smith" #307

1912	May 31	To Voucher	140	1912	May 31	By Edley 2m	5854	400
July 31	"	"	145	July 31	"	"	6021	416
								416

4c Lithium Plant #3055

1912	June 29	To Voucher	145	1912	June 29	By Edley 2m	6027	45
July 31	"	"	140	July 31	"	"	8178	173.66
Aug 31	"	"	129	Aug 31	"	"	6320	123.24
								286.90

L. M. Maintaining Storage Patterns

#3208

1912	To Lumber			155	1912	By Photo 1000			7001	2438
Jan 31	"	"	"	35	Jan 31	"	"	"	7131	5692
Feb 28	"	"	"	1214	Feb 28	"	"	"	7131	5692
										9130
Mar 31	To Lumber		120	1611	Mar 31	By Photo 1000	7277		1688	
Apr 30	"	"	37	1180	Apr 30	"	"	7412	3031	
May 31	"	"	140	2551	May 31	"	"	7529	2342	
June 30	"	"	142	2342	June 30	"	"	7680	1776	
July 31	"	"	125	1776	July 31	"	"	7808	3681	
Aug 31	"	"	129	3681	Aug 31	"	"	7928	1162	
Sept 30	"	"	116	1162	Sept 30	"	"	8044	1612	
Oct 31	"	"	189	1612	Oct 31	"	"	8149	1947	
Nov 30	"	"	171	1711	Nov 30	"	"	8271	390	
Dec 31	"	"	144	390	Dec 31	"	"	8397	1408	
			156	1408					1408	

103

Sheet No.

Name
AddressLaboratory Material to Build Printing Machine
1926

1913	Jan 31	To Lumber	100	2375	Jan 31	By 708 Lumber	1996	7370
	Feb 28	"	12.4	12.4	Feb 28	"	7128	5239
				88.12				133.29
Mar 31	To Lumber	12.0	99.50	Mar 31	By 708 Lumber	7090	99.50	✓
Apr 30	"	97	16.00	Apr 30	"	"	7398	1442.1
"	"	137	30	May 31	"	"	4511	1031.1
"	"	140	127.21	June 30	"	"	7623	1282.9
May 31	"	112	100.15	July 31	"	"	7775	2058.6
June 30	"	12.5	128.2	Aug 31	"	"	7785	540.8
July 31	"	12.9	2058.6	Sept 30	"	"	8021	1563
Aug 31	"	23	50	Oct 31	"	"	8124	733.29
	"	"	79					200
	"	"	104					2.00
	"	"	116					52.03
Sept 30	"	"	18.9					146.3
Oct 31	"	"	10.7					85.59

Mr. Leonard L & M.

1913	Jan 31	To Lumber	100	1913	Jan 31	By L & M Lumber	1996	7370
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Sheet No.

Name
Address

Mr. Leonard L & M

104

1913	Jan 31	To Lumber	100	1913	Jan 31	By L & M Lumber	1996	7370
	Feb 28	"	12.4		Feb 28	"	7128	5239
								133.29
Mar 31	To Lumber	12.0	99.50	Mar 31	By 708 Lumber	7090	99.50	✓
Apr 30	"	97	16.00	Apr 30	"	"	7398	1442.1
"	"	137	30	May 31	"	"	4511	1031.1
"	"	140	127.21	June 30	"	"	7623	1282.9
May 31	"	112	100.15	July 31	"	"	7775	2058.6
June 30	"	12.5	128.2	Aug 31	"	"	7785	540.8
July 31	"	12.9	2058.6	Sept 30	"	"	8021	1563
Aug 31	"	23	50	Oct 31	"	"	8124	733.29
	"	"	79					200
	"	"	104					2.00
	"	"	116					52.03
Sept 30	"	"	18.9					146.3
Oct 31	"	"	10.7					85.59

Mr. Leonard L & M.

1913	Jan 31	To Lumber	100	1913	Jan 31	By L & M Lumber	1996	7370
	Feb 28	"	12.4		Feb 28	"	7128	5239
								133.29
Mar 31	To Lumber	12.0	99.50	Mar 31	By 708 Lumber	7090	99.50	✓
Apr 30	"	97	16.00	Apr 30	"	"	7398	1442.1
"	"	137	30	May 31	"	"	4511	1031.1
"	"	140	127.21	June 30	"	"	7623	1282.9
May 31	"	112	100.15	July 31	"	"	7775	2058.6
June 30	"	12.5	128.2	Aug 31	"	"	7785	540.8
July 31	"	12.9	2058.6	Sept 30	"	"	8021	1563
Aug 31	"	23	50	Oct 31	"	"	8124	733.29
	"	"	79					200
	"	"	104					2.00
	"	"	116					52.03
Sept 30	"	"	18.9					146.3
Oct 31	"	"	10.7					85.59

1913

Lymon Shale Co L & M

Mar 31	To Lumber	120	1913	Mar 31	By L & M Lumber	1996	7370
Apr 30	"	140		Apr 30	"	7401	5239
May 31	"	112		May 31	"	7552	133.29
June 30	"	12.9		June 30	"	7697	2058.6
July 31	"	12.9		July 31	"	7826	540.8
Aug 31	"	116		Aug 31	"	7922	1563
Sept 31	"	"		Sept 31	"	"	8124

1913

Laboratory Material to make 18mm diameter by 1mm long

Aug 30	To Lumber	5	20.47	Aug 31	By 708 Lumber	7719	20.47
	"	117	37	Sept 31	"	8023	7300
	"	116	253.53	Oct 31	"	8120	501.04
Sept 30	"	109	73.00	Nov 30	"	8261	250.65
Oct 31	"	32	59.27	Dec 31	"	8385	28.16
	"	36	226	Jan 31	"	844	52.15
	"	96	200				
	"	122	437.21				
	"	147	447				
Nov 30	"	148	250.18				
	"	145	10.69				
Dec 31	"	145	29				
	"	146	1.32				
	"	147	23.6				
	"	148	1.98				
Jan 31	"	149	1.98				

Lymon Shale Co

Sheet No. _____

Name
AddressLyman Photo Co
#3501

1912

Sept 30	To Luncher	109	1435	Sept 31	By L.M. Linn	8000	1435
Oct 31	"	112	198	Oct 31	"	8161	3415
"	"	122	3120	Nov 30	"	8276	1259
Nov 30	"	111	1557	Dec 31	"	8677	1077
Dec 31	"	156	1077	Jan 31	"	8718	05
Jan 31	"	127	00	Feb 28	"	8607	1181
Feb 28	"	132	1114	Mar 31	"	8759	1100
Mar 31	"	106	1100	Apr 30	"	8836	6174
Apr 30	"	116	6174	May 30	"	9021	593
May 30	"	106	593	June 30	"	9046	2108
June 30	"	136	160	July 31	"	9125	169
July 31	"	90	321	Aug 30	"	9207	321
Aug 31	General Expense	210					
			11679				11679

1913

L.M. to Repair & Supply Parts

Sept 30	To Luncher	109	6159	Sept 30	By L.M. Linn	8000	6159
Nov 30	"	117	113	Nov 30	"	8262	113

1913

L.M. to Lumber/Paint/Storage

Sept 30	To Luncher	109	560	Sept 30	To Linn L.L. Co	7999	560
Oct 31	"	122	2148	Oct 31	"	8106	2248
Nov 30	"	124	5795	Nov 30	"	8228	5795

Sheet No. _____

Name
AddressLumber Material Co. S. Mayhew
#3666

1912

Nov 30	To Luncher	141	1053	Nov 30	By L.M. Linn	8000	1053
Jan 31	"	127	1041	Jan 31	"	8267	1041

1913

Labor & Material for Repairing Telephone

Sept 31	Luncher	101	10	Sept 31	By L.M. Linn	8397	10
Oct 31	"	124	1040	Oct 31	"	8721	1040
Nov 31	"	119	111	Nov 31	"	8771	111
Dec 31	"	132	1877	Dec 31	"	8706	1877
Mar 31	"	106	1292	Mar 31	"	8706	1292

1913

Labor & Material (F.H. Lovell) Parts

Sept 31	Luncher	106	2053	Sept 31	By Linn L.L. Co	8313	2053
Oct 31	"	76	170	Oct 31	"	8121	170
Nov 31	"	89	210	Nov 31	"	8060	210
Dec 30	"	165	149	Dec 30	"	8494	149

Sheet No. _____

Name
AddressL & M to make two units of Hand Searing Machine
#8495

		1911		1912	
Sept 31	Lumber	156	367	Sept 31	78.6 on Inv
Jan 31	"	114	51	Jan 31	" " "
"	"	127	52	Feb 28	" " "
Feb 28	"	134	110	Apr 30	" " "
Apr 30	"	115	66	May 31	" " "
"	"	116	160	June 30	" " "
May 31	"	615	376.5		
June 30	"	106	125		

1911

Load & prepare Lumber #2613

Sept 31	Lumber	127	3339	Jan 31	78.6 on Inv
Feb 28	"	134	232.3	Feb 28	" " "
Apr 30	"	106	197.6	May 31	" " "
May 31	"	103	172.6	Apr 30	" " "
			134	May 31	" " "

1911

Landers Shipped

Apr 30	Lumber	116	774	Apr 30	78.6 on Inv
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Sheet No. _____

Name
Address

L & M to make two units of Legal Dept #3649

		1911		1912	
May 31	Lumber	115	3646	May 31	8.8 on Inv
June 30	"	106	22916	June 30	36.4 on Inv
July 31	"	136	17713	July 31	" " "
Aug 30	Ed. B. on Inv	9047	3646	"	" " "
"	Lumber	200	200	Aug 30	" " "
"	"	56	10	Sept 30	" " "
"	"	90	120.5		
Sept 30	"	90	233.5		

1911

L & M To install one unit of 20 Bache's Stationery #3649

June 30	Lumber	68	1119	June 30	78.6 on Inv
July 31	"	106	22916	July 31	" " "
"	"	88	17713	Aug 30	" " "
"	"	126	3646	Sept 30	" " "
"	"	89	200	Oct 31	" " "
"	"	114	151		
"	"	126	200		
"	"	136	221.02		
"	"	79	652		
"	"	80	926		
"	"	90	120.5		
Sept 30	"	25	193		
Oct 31	"	44	202		

1911

L & M To make 3-5-2 Lumber #3649

June 30	Lumber	71	60	June 30	8.8 on Inv
July 31	"	106	7006	July 31	" " "
Aug 31	"	136	2084	Aug 30	" " "
"	"	90	2393		

Sheet No. _____

Name
AddressL & M To Make Patterns For Tools For Model 1915 Komete
#3600

1914			1914			1914		
June 30	Lumber	106	June 30	By Elm Lumber	9110	June 30	By Elm Lumber	9110
July 31	"	126	July 31	"	9116	July 31	"	9116
Aug 30	"	90	Aug 30	"	9116	Aug 30	"	9116

1914			1914			1914		
Aug 30	Lumber	89	Aug 30	By Elm Lumber	9115	Aug 30	By Elm Lumber	9115
Sept 30	"	90	Sept 30	"	9115	Sept 30	"	9115

L & M One Lumber For One Sample

1914			1914			1914		
Aug 30	Lumber	90	Aug 30	By Elm Lumber	9115	Aug 30	By Elm Lumber	9115
Sept 30	"	90	Sept 30	"	9115	Sept 30	"	9115
Oct 31	"	115	Oct 31	"	9115	Oct 31	"	9115
Dec 31	"	152	Dec 31	"	9115	Dec 31	"	9115

Sheet No. _____

Name
AddressL & M in the Manufacture of Graphophones and Gramophones
#3719

1914			1914			1914		
Dec 31	Lumber	53	Dec 31	By Elm Lumber	9116	Dec 31	By Elm Lumber	9116
"	"	111	"	"	9116	"	"	9116
"	"	126	"	"	9116	"	"	9116
"	"	137	"	"	9116	"	"	9116
"	"	139	"	"	9116	"	"	9116
"	"	150	"	"	9116	"	"	9116
"	"	152	"	"	9116	"	"	9116
"	"	14	"	"	9116	"	"	9116
"	"	29	"	"	9116	"	"	9116
"	"	40	"	"	9116	"	"	9116
"	"	46	"	"	9116	"	"	9116
"	"	47	"	"	9116	"	"	9116
"	"	48	"	"	9116	"	"	9116
"	"	90	"	"	9116	"	"	9116
"	"	91	"	"	9116	"	"	9116

In 1914

1914			1914			1914		
Dec 31	Lumber	152	Dec 31	By Elm Lumber	9115	Dec 31	By Elm Lumber	9115
Jan 31	"	138	Jan 31	"	9115	Jan 31	"	9115

L & M to Cover Lumber Done

1914			1914			1914		
Jan 31	Lumber	138	Jan 31	By Elm Lumber	9115	Jan 31	By Elm Lumber	9115
Feb 28	"	147	Feb 28	"	9115	Feb 28	"	9115
Mar 31	"	171	Mar 31	"	9115	Mar 31	"	9115
Apr 30	"	252	Apr 30	"	9115	Apr 30	"	9115
May 31	"	293	May 31	"	9115	May 31	"	9115
June 30	"	251	June 30	"	9115	June 30	"	9115
July 31	"	255	July 31	"	9115	July 31	"	9115
Aug 31	"	251	Aug 31	"	9115	Aug 31	"	9115
Sept 30	"	251	Sept 30	"	9115	Sept 30	"	9115
Oct 31	"	251	Oct 31	"	9115	Oct 31	"	9115
Nov 30	"	251	Nov 30	"	9115	Nov 30	"	9115
Dec 31	"	251	Dec 31	"	9115	Dec 31	"	9115
Jan 31	"	148	Jan 31	"	9115	Jan 31	"	9115
Feb 28	"	176	Feb 28	"	9115	Feb 28	"	9115
Mar 31	"	119	Mar 31	"	9115	Mar 31	"	9115

Sheet No. _____

Name _____
Address _____Landing King's Island
Hogs

1911		1912		1913		1914	
July 31	Voucher	120	July 29	Edmundson	11943	3730	
July 29	"	67	July 30	"	11194	15	
		71					
		176					
Apr 30		27					

1911		1912		1913		1914	
July 31	Voucher	29	July 29	Edmundson	11943	10017	
	"	110	July 31	"	11194	12528	
Mar 31	"	126	Apr 30	"	11194	15	
Apr 30	"	119					

1916		1917		1918		1919	
July 29	Voucher	126	July 29	Edmundson	11943	778	
Mar 31	"	30	Mar 31	"	11194	710	
	"	86					

Sheet No. _____

Name _____
Address _____Backs for Dining Cabinets in Hampton Sept
1914

1915		1916		1917		1918	
July 31	Voucher	121	July 31	Edmundson	11943	473	
June 30	"	108	June 30	"	11194	302	

1915		1916		1917		1918	
July 31	Voucher	121	July 31	Edmundson	11943	473	
June 30	"	108	June 30	"	11194	302	

1916		1917		1918		1919	
July 29	Voucher	126	July 29	Edmundson	11943	778	
Mar 31	"	30	Mar 31	"	11194	710	
	"	86					

Sheet No. _____

Name _____

Address _____

L.M. Paduan for Jackson, La. Plate

4x20

June 30	Voucher	105	77	June 30	E. Ph. Th. Th. Th.	11574	677
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L.M. Paduan for Jackson, La. Plate

June 30	Voucher	105	105	June 30	E. Ph. Th. Th. Th.	11574	1054
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L.M. to Make Some Shipping 4x33

June 30	Voucher	105	121	June 30	M.E. Th. Th. Th.	11574	121
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Sheet No. _____

Name _____

Address _____

L.M. to Cover Engineering Work at Sabalero

R-11536

June 30	Voucher	105	6570	June 30	M.E. Th. Th. Th.	11574	6570
July 31	"	132	10010	July 31	"	11704	10016

L.M. to Make Milling Base for Bayel. Supports

July 31	Voucher	126	1164	July 31	E. Ph. Th. Th. Th.	11704	3213
		80	1618				
		132	1573				

L.M. to Make Some Shipping 4x33

July 31	Voucher	126	826	July 31	E. Ph. Th. Th. Th.	11704	1354
		80	1318				
		132	1573				

Name _____
Address _____

1 Large Picture Frame for Maps
4889

1916		1916		1916		1916	
July 31	Voucher 60	225	July 31	1916	11718	705	
	132	1480					

La bar to Make 660 Thides

July 31	Voucher	122	11799	July 31	Ph. Blank, D.C.	11720	11799
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[illegible]

Sheet No. 2

Name

Address

Making Model House #1934

PER MONTHLY PAYMENTS ON HOUSE

1934

Oct. 30 To Balance	41	68.5481
	47	116.27
	45	1201
	52	33
	53	260
	69	11
	70	264
	76	277
	78	465
	82	2954
	84	41
	88	260
	89	85544
	90	42772
Dec. 31	9	52948
	13	260
	28	350
	31	45
	42	3451
	43	334
	47	2395
	52	21070
	58	530
	60	761
	70	97533
	72	280
	74	1098
	82	975
	86	300
	89	529
	92	1206
	99	240
	100	3071
	104	127257
	104	33
Jan. 30	105	63630
	105	59117
	107	550
	107	650
	107	1060
	107	144
	107	1710
	107	2458
	107	380
	107	5769
	107	27627
	107	2880
	107	222
	107	120
	107	292
	107	112
	107	226
	107	5256
	110	90130
	111	45065
	13	57705

Sheet No. 2Name
Address

Making Model House #1934

Sheet No. 1813Name
AddressMaking Lithium Potash #2017
#1947

1907			
Feb 27	Barkfurness	13	77.05
	To Voucher	8	30.50
"	"	59	2.75
"	"	65	22.08
"	"	85	1.62
"	"	88	1.300
"	"	98	172.77
"	"	99	7.43
"	"	100	86.44
Mar 31	"	60	1.106
"	"	64	1.20
"	"	67	1.212.17

1910			
Sept 27	Barkfurness	96	242.71
	To Voucher	97	7.00
"	"	98	385.44
Oct 31	"	22	34.36
"	"	93	36.73
"	"	94	183.7
"	"	96	7.82
Nov 30	"	57	27.05
"	"	88	247.8
"	"	126	33.08
"	"	128	66.16
"	"	129	56.77
Dec 31	"	116	21.0
"	"	117	11.93
Jan 31	"	119	23.85
"	"	120	44.66
"	"	91	30.1
"	"	92	16.1
Feb 28	"	94	11.68
"	"	16	78.00
"	"	102	3.5
"	"	103	70
"	"	104	71
Mar 31	"	116	43.2
"	"	117	7.13
"	"	118	3.57
Apr 30	"	28	43.61
"	"	30	45.27
"	"	113	29.46
"	"	114	6.64
May 31	"	115	82.57
"	"	116	32.19
"	"	117	6.43
June 30	"	38	17.55
"	"	117	47.19
"	"	118	19.69
"	"	119	20.60
July 31	"	33	12.56
"	"	110	18.51
"	"	111	37.62
Aug 31	"	33	7.87
"	"	117	7.69
"	"	120	7.87
"	"	121	23.87
Sept 30	"	108	27.6
"	"	109	2.5
"	"	110	2.24
Oct 31	"	31	7.77
"	"	112	21.55
"	"	113	107.8
"	"	115	2.33
Nov 30	"	36	12.17

Sheet No. _____

Name
Address

Sheet No. _____

Name
Address

Sheet No. 10

Name
Address

W. H. Miller Labor & Materials

1908

Mar 31 To Voucher 69

Apr 30 " " 71

May 31 " " 86

Jun 30 " " 80

Jul 31 " " 79

Aug 31 " " 80

Sept 30 " " 56

Oct 31 " " 96

Nov 30 " " 104

Dec 31 " " 90

Jan 31 " " 99

Feb 27 " " 99

Mar 31 " " 104

Apr 30 " " 111

May 31 " " 84

Jun 30 " " 108

Jul 31 " " 108

Aug 31 " " 113

Sep 30 " " 104

Oct 31 " " 102

Nov 30 " " 133

Dec 31 " " 115

Jan 31 " " 90

Feb 27 " " 103

Mar 31 " " 118

Apr 30 " " 119

May 31 " " 80

Jun 30 " " 98

Jul 31 " " 100

Aug 31 " " 96

Sep 30 " " 96

Oct 31 " " 129

Nov 30 " " 116

Dec 31 " " 114

Jan 31 " " 115

Feb 27 " " 117

Mar 31 " " 115

Apr 30 " " 115

May 31 " " 115

Jun 30 " " 115

Jul 31 " " 115

Aug 31 " " 115

Sep 30 " " 115

Oct 31 " " 115

Nov 30 " " 115

Dec 31 " " 115

Jan 31 " " 115

Feb 27 " " 115

Mar 31 " " 115

Apr 30 " " 115

May 31 " " 115

Jun 30 " " 115

Jul 31 " " 115

Aug 31 " " 115

Sep 30 " " 115

Oct 31 " " 115

Nov 30 " " 115

Dec 31 " " 115

1908

Mar 31 By L & M Invoice 64

Apr 30 " " 120

May 31 " " 179

Jun 30 " " 264

Jul 31 " " 333

Aug 31 " " 396

Sep 30 " " 479

Oct 31 " " 538

Nov 30 " " 577

Dec 31 " " 670

Jan 31 " " 862

Feb 27 " " 1000

Mar 31 " " 1082

Apr 30 " " 1163

May 31 " " 1247

Jun 30 " " 1321

Jul 31 " " 1403

Aug 31 " " 1489

Sep 30 " " 1570

Oct 31 " " 1676

Nov 30 " " 1763

Dec 31 " " 1841

Jan 31 " " 1920

Feb 27 " " 1986

Mar 31 " " 2162

Apr 30 " " 2221

May 31 " " 2366

Jun 30 " " 2521

Jul 31 " " 2681

Aug 31 " " 2817

Sep 30 " " 2928

Oct 31 " " 3137

Nov 30 " " 3393

Dec 31 " " 4153

Jan 31 " " 4153

Feb 27 " " 4153

Mar 31 " " 4153

Apr 30 " " 4153

May 31 " " 4153

Jun 30 " " 4153

Jul 31 " " 4153

Aug 31 " " 4153

Sep 30 " " 4153

Oct 31 " " 4153

Nov 30 " " 4153

Dec 31 " " 4153

Jan 31 " " 4153

Feb 27 " " 4153

Mar 31 " " 4153

Apr 30 " " 4153

May 31 " " 4153

Jun 30 " " 4153

Jul 31 " " 4153

Aug 31 " " 4153

Sep 30 " " 4153

Oct 31 " " 4153

Nov 30 " " 4153

Dec 31 " " 4153

1913

Mar 31 By L & M Invoice 206

Apr 30 " " 1450

May 31 " " 1450

Jun 30 " " 1450

Jul 31 " " 1450

Aug 31 " " 1450

Sep 30 " " 1450

Oct 31 " " 1450

Nov 30 " " 1450

Dec 31 " " 1450

Jan 31 " " 1450

Feb 27 " " 1450

Mar 31 " " 1450

Apr 30 " " 1450

May 31 " " 1450

Jun 30 " " 1450

Jul 31 " " 1450

Aug 31 " " 1450

Sep 30 " " 1450

Oct 31 " " 1450

Nov 30 " " 1450

Dec 31 " " 1450

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____Muscul. Experiments by Mr. Cressman
P. 2028

16

1893		1893		1893		1893		1893	
Mar 31	To London	120	213.11	Mar 31	By M. Cressman	7238	213.141		
Apr 30	" "	93	400	Apr 30	" "	7265	220.48		
" "	" "	41	33	May 31	" "	7481	228.52		
" "	" "	140	284.46	May 31	" "	7631	229.83		
May 31	" "	32	213.11	Jun 30	" "	7767	237.54		
" "	" "	114	213.11	Jun 30	" "	7852	213.14		
June 30	" "	41	170.93	Jul 31	" "	7944	214.71		
" "	" "	125	213.11	Jul 31	" "	8109	210.06		
July 31	" "	43	360	Nov 30	" "	8231	225.81		
" "	" "	103	144	Dec 31	" "	8253	262.65		
" "	" "	129	304.50	Jan 31	" "	8478	223.97		
Aug 30	" "	16	1137.4	Feb 28	" "	8620	238.62		
Sept 30	" "	30	156	" "	" "	8650	450		
" "	" "	109	241.15	Mar 31	" "	8677	463		
Oct 31	" "	127	270.06	Apr 30	" "	8763	210.00		
Nov 30	" "	147	263	May 31	" "	8880	210.00		
" "	" "	161	223.13	Jun 30	" "	8973	259.90		
Dec 31	" "	166	131	" "	" "		277.77		
1914	" "	156	262.50						
Jan 31	" "	26	120						
" "	" "	126	250						
Feb 28	" "	127	270.74						
" "	" "	27	34						
" "	" "	28	29						
" "	" "	76	90						
" "	" "	112	450						
" "	" "	134	237.09						
Mar 31	" "	106	268.63						
Apr 30	" "	116	210.00						
May 31	" "	115	210.00						
June 30	" "	106	249.99						

Sheet No. _____

Name
Address

Sheet No. 19

Name
Address

St. J. Miller Laborer, Mattoon

THE EMERSON TRADING CO. - KANSAS CITY

1907

Feb 27 To Voucher

29

30

59

98

5

34

38

47

80

89

91

102

122

115

100

88

88

116

122

108

128

142

130

144

121

31

155

58

69

91

107

134

56

85

120

247

140

88

129

77

109

36

111

106

115

41

71

110

116

108

1907

Feb 27 By L.M. Inwood

863

726

1001

1677

1762

1939

2365

2506

2126

5704

5706

6122

6555

6604

6903

7165

7165

7165

7165

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LEVER

1903

Mar 31 To Voucher

56

85

120

247

140

88

129

77

109

36

111

106

115

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71

110

116

108

Mar 31 To Voucher

120

61

1757

1757

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Name
Address

Name
Address

4682

12262

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1913		1913		1913		1913	
June 30	To Balance	91	900	June 30	By Balance	1070	477.67
	" "	107	205	July 31	" "	770	1,247.67
	" "	115	300	Aug 31	" "	770	1,247.67
July 31	" "	120	444.33	Sept 30	" "	770	1,247.67
	" "	126	320	Oct 31	" "	813	1,247.67
	" "	88	120	Nov 30	" "	824	1,247.67
	" "	112	120	Dec 31	" "	85	1,247.67
	" "	120	25	Jan 31	" "	85	1,247.67
	" "	127	30	Feb 28	" "	86	1,247.67
Aug 30	" "	129	444.33	Mar 31	" "	87	1,247.67
	" "	123	171		" "	87	1,247.67
	" "	124	107		" "	87	1,247.67
	" "	77	70		" "	87	1,247.67
	" "	77	30		" "	87	1,247.67
	" "	112	444.33		" "	87	1,247.67
Sept 30	" "	116	444.33		" "	87	1,247.67
	" "	30	112		" "	87	1,247.67
	" "	31	32		" "	87	1,247.67
	" "	32	32		" "	87	1,247.67
	" "	74	50		" "	87	1,247.67
	" "	91	60		" "	87	1,247.67
	" "	96	29		" "	87	1,247.67
	" "	109	358.67		" "	87	1,247.67
Oct 31	" "	64	170		" "	87	1,247.67
	" "	85	180		" "	87	1,247.67
	" "	103	210		" "	87	1,247.67
	" "	111	30		" "	87	1,247.67
	" "	122	344.91		" "	87	1,247.67
Nov 30	" "	126	170		" "	87	1,247.67
	" "	129	170		" "	87	1,247.67
	" "	129	180		" "	87	1,247.67
	" "	124	344.91		" "	87	1,247.67
Dec 31	" "	8	170		" "	87	1,247.67
	" "	110	200		" "	87	1,247.67
	" "	137	170		" "	87	1,247.67
	" "	143	142.8		" "	87	1,247.67
	" "	154	150		" "	87	1,247.67
1914	" "	156	437.72		" "	87	1,247.67
Jan 31	" "	77	70		" "	87	1,247.67
	" "	113	70		" "	87	1,247.67
	" "	120	30		" "	87	1,247.67
	" "	126	77		" "	87	1,247.67
	" "	127	451.37		" "	87	1,247.67
Feb 28	" "	35	300		" "	87	1,247.67
	" "	73	300		" "	87	1,247.67
	" "	101	241		" "	87	1,247.67
	" "	102	412		" "	87	1,247.67
	" "	119	620		" "	87	1,247.67
	" "	124	285		" "	87	1,247.67
Mar 31	" "	32	464.56		" "	87	1,247.67
	" "	45	32.87		" "	87	1,247.67
	" "	50	44.0		" "	87	1,247.67
	" "	66	150		" "	87	1,247.67
	" "	66	4.99		" "	87	1,247.67
	" "	66	45.74		" "	87	1,247.67

Sheet No.

Name
AddressMum & Mineral Satal
#2262

1915	1916	1917	1918	1919	1920
Mar 31	Bought & Sold	Mar 31	Bought & Sold	Mar 31	Bought & Sold
Apr 30		Apr 30		Apr 30	
May 31		May 31		May 31	
Jun 30		Jun 30		Jun 30	
Jul 31		Jul 31		Jul 31	
Aug 31		Aug 31		Aug 31	
Sept 30		Sept 30		Sept 30	
Oct 31		Oct 31		Oct 31	
Nov 30		Nov 30		Nov 30	
Dec 31		Dec 31		Dec 31	
1915	1916	1917	1918	1919	1920
Jan 31		Jan 31		Jan 31	
Feb 28		Feb 28		Feb 28	
Mar 31		Mar 31		Mar 31	
Apr 30		Apr 30		Apr 30	
May 31		May 31		May 31	
Jun 30		Jun 30		Jun 30	
Jul 31		Jul 31		Jul 31	
Aug 31		Aug 31		Aug 31	
Sept 30		Sept 30		Sept 30	
Oct 31		Oct 31		Oct 31	
Nov 30		Nov 30		Nov 30	
Dec 31		Dec 31		Dec 31	

Sheet No.

Name
AddressMum & Mineral Satal
#2262

1915	1916	1917	1918	1919	1920
Feb 28	Amber	Feb 28	Amber	Feb 28	Amber
Mar 31		Mar 31		Mar 31	
Apr 30		Apr 30		Apr 30	
May 31		May 31		May 31	
Jun 30		Jun 30		Jun 30	
Jul 31		Jul 31		Jul 31	
Aug 31		Aug 31		Aug 31	
Sept 30		Sept 30		Sept 30	
Oct 31		Oct 31		Oct 31	
Nov 30		Nov 30		Nov 30	
Dec 31		Dec 31		Dec 31	
1915	1916	1917	1918	1919	1920
Jan 31		Jan 31		Jan 31	
Feb 28		Feb 28		Feb 28	
Mar 31		Mar 31		Mar 31	
Apr 30		Apr 30		Apr 30	
May 31		May 31		May 31	
Jun 30		Jun 30		Jun 30	
Jul 31		Jul 31		Jul 31	
Aug 31		Aug 31		Aug 31	
Sept 30		Sept 30		Sept 30	
Oct 31		Oct 31		Oct 31	
Nov 30		Nov 30		Nov 30	
Dec 31		Dec 31		Dec 31	

Sheet No.

Name

Address

Music & Mineral Sales

1262

Oct 31	Number	176	08 Nov 30	106.7	106.7
"	"	177	106.8	106.8	106.8
Nov 30	"	1	106.9	106.9	106.9
"	"	12	205.1	205.1	205.1
"	"	33	106.6	106.6	106.6
"	"	36	30.1	30.1	30.1
"	"	46	106.6	106.6	106.6
"	"	106	111.0	111.0	111.0
"	"	117	108	108	108
"	"	120	101.68	101.68	101.68
"	"	138	100.0	100.0	100.0
"	"	157	27	27	27
"	"	217	106.7	106.7	106.7
Dec 31	"	13	106.7	106.7	106.7
"	"	100	200	200	200
"	"	18	210.0	210.0	210.0
"	"	20	277	277	277
"	"	26	110	110	110
"	"	27	31	31	31
"	"	28	57.4	57.4	57.4
"	"	37	100	100	100
"	"	47	160	160	160
"	"	71	107.1	107.1	107.1
"	"	96	87.30	87.30	87.30
"	"	98	104.6	104.6	104.6
"	"	107	540.0	540.0	540.0
"	"	110	210.0	210.0	210.0
"	"	132	30.0	30.0	30.0
"	"	136	126.40	126.40	126.40
"	"	138	97.0	97.0	97.0
"	"	148	130	130	130
"	"	149	400	400	400
"	"	157	160.0	160.0	160.0
"	"	158	40.0	40.0	40.0
"	"	200	177.10	177.10	177.10
"	"	225	12	12	12
Jan 31	"	226	205.7	205.7	205.7
"	"	1	27	27	27
"	"	8	26.1	26.1	26.1
"	"	19	100.0	100.0	100.0
"	"	21	104.0	104.0	104.0
"	"	27	185.0	185.0	185.0
"	"	37	131.2	131.2	131.2
"	"	39	128.52	128.52	128.52
"	"	43	124.04	124.04	124.04
"	"	62	27	27	27
"	"	58	298.5	298.5	298.5
"	"	72	117	117	117
"	"	83	200	200	200
"	"	130	107.0	107.0	107.0
"	"	133	132.0	132.0	132.0
"	"	148	201.0	201.0	201.0
"	"	109	250.0	250.0	250.0

Sheet No.

Name

Address

Music & Mineral Sales

1262

Jan 31	Number	30	Feb 29	30	30
Mar 31	"	31	Mar 31	110.0	110.0
"	"	32	Apr 30	26	26
"	"	33	May 31	110.0	110.0
"	"	34	June 30	110.0	110.0
"	"	63	July 31	110.0	110.0
"	"	70	"	110.0	110.0
"	"	74	"	110.0	110.0
"	"	87	"	110.0	110.0
"	"	120	"	110.0	110.0
"	"	117	"	110.0	110.0
"	"	121	"	110.0	110.0
"	"	126	"	110.0	110.0
Mar 31	Number	126	Apr 30	126	126
"	"	37	37	37	37
"	"	38	37	37	37
"	"	60	350	350	350
"	"	70	300	300	300
"	"	76	210.0	210.0	210.0
"	"	86	114.3	114.3	114.3
"	"	113	77.3	77.3	77.3
"	"	118	24	24	24
Apr 30	Number	119	May 31	119	119
"	"	87	79.70	79.70	79.70
"	"	88	11	11	11
"	"	91	107.10	107.10	107.10
"	"	10	10	10	10
"	"	46	200	200	200
"	"	93	76.64	76.64	76.64
"	"	117	600	600	600
"	"	128	27.27	27.27	27.27
"	"	138	271.57	271.57	271.57
June 30	"	26	350.0	350.0	350.0
"	"	71	61.70	61.70	61.70
"	"	103	125	125	125
"	"	108	127.20	127.20	127.20
"	"	117	300	300	300
"	"	94	37.27	37.27	37.27
"	"	86	100.0	100.0	100.0
"	"	127	111.95	111.95	111.95

Sheet No. _____

Name _____

Address _____

Sheet No. 44Name _____
Address _____

Miniature Bell for Police & Miners

2360

1911	Mar 31	To voucher	117	10.00	Mar 31	By balance from	3663	15800
"	"	"	118	5.00	Apr 30	"	3836	2969
Apr 30	"	"	113	5.00	May 31	"	4019	3366
"	"	"	114	19.51	July 30	"	4212	3263
"	"	"	115	4.50	July 31	"	4451	2963
May 31	"	"	67	4.50	"	"	4577	1066
"	"	"	114	22.05	Aug 31	"	4608	4936
"	"	"	115	212.85	Sept 30	"	4745	4685
"	"	"	116	57.77	Oct 31	"	4895	5228
"	"	"	117	3.50	Nov 30	"	5043	5228
June 30	"	"	71	60	Dec 30	"	5190	5228
"	"	"	72	100	Jan 31	"	5334	5228
"	"	"	118	249.25	Feb 29	"	5472	5228
"	"	"	119	12.25	Mar 30	"	5605	5228
"	"	"	119	64.65	Apr 30	"	5764	5228
"	"	"	120	26.95	May 31	"	5895	5228
July 31	"	"	34	76.35	June 30	"	6006	5228
"	"	"	74	45	July 31	"	6158	5228
"	"	"	109	30.00	"	"	"	5228
"	"	"	110	46.79	"	"	"	5228
"	"	"	111	213.58	"	"	"	5228
"	"	"	112	11.50	"	"	"	5228
Aug 31	"	"	70	0.5	"	"	"	5228
"	"	"	83	11.10	"	"	"	5228
"	"	"	119	2.24	"	"	"	5228
"	"	"	120	34.26	"	"	"	5228
"	"	"	121	95.60	"	"	"	5228
"	"	"	122	12.25	"	"	"	5228
Sept 30	"	"	73	15.00	"	"	"	5228
"	"	"	108	32.47	"	"	"	5228
"	"	"	109	12.25	"	"	"	5228
"	"	"	110	3.19	"	"	"	5228
"	"	"	111	19.22	"	"	"	5228
Oct 31	"	"	112	36.11	"	"	"	5228
"	"	"	113	22.39	"	"	"	5228
"	"	"	114	27.05	"	"	"	5228
"	"	"	115	2.01	"	"	"	5228
Nov 30	"	"	71	21.47	"	"	"	5228
"	"	"	117	38.71	"	"	"	5228
"	"	"	118	15.27	"	"	"	5228
"	"	"	119	7.26	"	"	"	5228
"	"	"	120	35.77	"	"	"	5228
Dec 30	"	"	69	30	"	"	"	5228
"	"	"	121	62.58	"	"	"	5228
Jan 31	"	"	122	10.25	"	"	"	5228
Feb 29	"	"	144	5.00	"	"	"	5228
"	"	"	127	26.70	"	"	"	5228
Mar 30	"	"	108	19.22	"	"	"	5228
Apr 30	"	"	144	96.09	"	"	"	5228
"	"	"	73	83.145	"	"	"	5228
May 31	"	"	140	77.12	"	"	"	5228
"	"	"	84	89.43	"	"	"	5228
June 30	"	"	145	81.41	"	"	"	5228
July 31	"	"	83	65.75	"	"	"	5228
"	"	"	126	15.75	"	"	"	5228

Name _____

Address _____

Motion Picture Experiment of Educational Purposes
#278

1914

Year	Month	Day	Time	Location	Remarks	Amount
1901	Aug	30	10:00	St. Paul	St. Paul	100.00
1902	Jan	1	10:00	St. Paul	St. Paul	100.00
1903	Feb	1	10:00	St. Paul	St. Paul	100.00
1904	Mar	1	10:00	St. Paul	St. Paul	100.00
1905	Apr	1	10:00	St. Paul	St. Paul	100.00
1906	May	1	10:00	St. Paul	St. Paul	100.00
1907	Jun	1	10:00	St. Paul	St. Paul	100.00
1908	Jul	1	10:00	St. Paul	St. Paul	100.00
1909	Aug	1	10:00	St. Paul	St. Paul	100.00
1910	Sep	1	10:00	St. Paul	St. Paul	100.00
1911	Oct	1	10:00	St. Paul	St. Paul	100.00
1912	Nov	1	10:00	St. Paul	St. Paul	100.00
1913	Dec	1	10:00	St. Paul	St. Paul	100.00
1914	Jan	1	10:00	St. Paul	St. Paul	100.00
1915	Feb	1	10:00	St. Paul	St. Paul	100.00
1916	Mar	1	10:00	St. Paul	St. Paul	100.00
1917	Apr	1	10:00	St. Paul	St. Paul	100.00
1918	May	1	10:00	St. Paul	St. Paul	100.00
1919	Jun	1	10:00	St. Paul	St. Paul	100.00
1920	Jul	1	10:00	St. Paul	St. Paul	100.00
1921	Aug	1	10:00	St. Paul	St. Paul	100.00
1922	Sep	1	10:00	St. Paul	St. Paul	100.00
1923	Oct	1	10:00	St. Paul	St. Paul	100.00
1924	Nov	1	10:00	St. Paul	St. Paul	100.00
1925	Dec	1	10:00	St. Paul	St. Paul	100.00
1926	Jan	1	10:00	St. Paul	St. Paul	100.00
1927	Feb	1	10:00	St. Paul	St. Paul	100.00
1928	Mar	1	10:00	St. Paul	St. Paul	100.00
1929	Apr	1	10:00	St. Paul	St. Paul	100.00
1930	May	1	10:00	St. Paul	St. Paul	100.00
1931	Jun	1	10:00	St. Paul	St. Paul	100.00
1932	Jul	1	10:00	St. Paul	St. Paul	100.00
1933	Aug	1	10:00	St. Paul	St. Paul	100.00
1934	Sep	1	10:00	St. Paul	St. Paul	100.00
1935	Oct	1	10:00	St. Paul	St. Paul	100.00
1936	Nov	1	10:00	St. Paul	St. Paul	100.00
1937	Dec	1	10:00	St. Paul	St. Paul	100.00
1938	Jan	1	10:00	St. Paul	St. Paul	100.00
1939	Feb	1	10:00	St. Paul	St. Paul	100.00
1940	Mar	1	10:00	St. Paul	St. Paul	100.00
1941	Apr	1	10:00	St. Paul	St. Paul	100.00
1942	May	1	10:00	St. Paul	St. Paul	100.00
1943	Jun	1	10:00	St. Paul	St. Paul	100.00
1944	Jul	1	10:00	St. Paul	St. Paul	100.00
1945	Aug	1	10:00	St. Paul	St. Paul	100.00
1946	Sep	1	10:00	St. Paul	St. Paul	100.00
1947	Oct	1	10:00	St. Paul	St. Paul	100.00
1948	Nov	1	10:00	St. Paul	St. Paul	100.00
1949	Dec	1	10:00	St. Paul	St. Paul	100.00
1950	Jan	1	10:00	St. Paul	St. Paul	100.00
1951	Feb	1	10:00	St. Paul	St. Paul	100.00
1952	Mar	1	10:00	St. Paul	St. Paul	100.00
1953	Apr	1	10:00	St. Paul	St. Paul	100.00
1954	May	1	10:00	St. Paul	St. Paul	100.00
1955	Jun	1	10:00	St. Paul	St. Paul	100.00
1956	Jul	1	10:00	St. Paul	St. Paul	100.0

Sheet No. 52

Name _____
Address _____

Motion Picture Machine (High speed)
#3043

DOI: 10.1002/for

[illegible]

Sheet No. _____

Name
Address

Sheet No. _____

Name
AddressMisc. Book-ends for Mrs. Hutchinson
1934

A-1000

1000's
1000's

532

1913

Oct 1 Bond Linn
31 To Linn

127	127
35	35
36	36
57	57
63	63
65	65
80	80
91	91
127	127
127	127
13	13
34	34
47	47
48	48
49	49
70	70
100	100
106	106
124	124
144	144
145	145
146	146
76	76
84	84
91	91
123	123
154	154
156	156
157	157
16	16
121	121
134	134
140	140
90	90
145	145
84	84
100	100
103	103
115	115
25	25
50	50
68	68
74	74
106	106
305	305
136	136
9121	9121
90	90
75	75
77	77
88	88
89	89

Nov 30

10	10
181	181
262	262
246	246
70	70
176	176
200	200
70	70
106	106
1192	1192
149	149
54	54
130	130
263	263
20	20
20	20
16	16
26	26
358	358
2195	2195
355	355
3940	3940
4156	4156
11871	11871
2502	2502
1656	1656
1112	1112
131	131
684	684
314	314
5279	5279
1640	1640
135	135
208	208
18	18
2132	2132
180	180
56	56
112	112
309	309
262	262
105	105
325	325
27	27
1117	1117

Dec 31

127	127
35	35
36	36
57	57
63	63
65	65
80	80
91	91
127	127
127	127
13	13
34	34
47	47
48	48
49	49
70	70
100	100
106	106
124	124
144	144
145	145
146	146
76	76
84	84
91	91
123	123
154	154
156	156
157	157
16	16
121	121
134	134
140	140
90	90
145	145
84	84
100	100
103	103
115	115
25	25
50	50
68	68
74	74
106	106
305	305
136	136
9121	9121
90	90
75	75
77	77
88	88
89	89

Jan 31

Feb 28

Mar 31

Apr 30

May 31

June 30

July 31

Aug 31

Sept 30

Oct 31

Nov 30

Dec 31

1914

1915

1916

1917

1913

Oct 31 Bond Linn
31 To Linn

127	127
35	35
36	36
57	57
63	63
65	65
80	80
91	91
127	127
127	127
13	13
34	34
47	47
48	48
49	49
70	70
100	100
106	106
124	124
144	144
145	145
146	146
76	76
84	84
91	91
123	123
154	154
156	156
157	157
16	16
121	121
134	134
140	140
90	90
145	145
84	84
100	100
103	103
115	115
25	25
50	50
68	68
74	74
106	106
305	305
136	136
9121	9121
90	90
75	75
77	77
88	88
89	89

Nov 30

Dec 31

1914

1915

1916

1917

1918

1919

1920

1921

1922

1923

1924

1925

1926

1927

1928

1929

1930

1931

1932

1933

1934

1935

1936

1937

Sheet No.

Name
Address

Miss Book done for Mrs. Hutchins

13th St

Oct 31	Bringing forward	90	Nov 30	M. Hutchins	91.79	57.7
"	"	91	Dec 31	M. Hutchins	95.61	153.1
"	"	113	Jan 30	"	99.55	154.63
"	"	115	Feb 31	"	99.57	155.20
"	"	109	Mar 30	"	101.65	156.85
"	"	15	Apr 30	"	37	157.22
"	"	60	May 31	"	161.53	158.83
"	"	109	Jun 30	"	100.53	159.36
"	"	103	Jul 31	"	159.36	159.36
"	"	171	Aug 31	"	159.36	159.36
"	"	52	"	"	159.36	159.36
"	"	30	"	"	159.36	159.36
"	"	46	"	"	159.36	159.36
"	"	64	"	"	159.36	159.36
"	"	70	"	"	159.36	159.36
"	"	74	"	"	159.36	159.36
"	"	94	"	"	159.36	159.36
"	"	93	"	"	159.36	159.36
"	"	105	"	"	159.36	159.36
"	"	24	"	"	159.36	159.36
"	"	78	"	"	159.36	159.36
"	"	80	"	"	159.36	159.36
"	"	99	"	"	159.36	159.36
"	"	130	"	"	159.36	159.36
"	"	181	"	"	159.36	159.36
"	"	189	"	"	159.36	159.36
"	"	293	"	"	159.36	159.36
"	"	193	"	"	159.36	159.36
"	"	135	"	"	159.36	159.36
"	"	293	"	"	159.36	159.36
"	"	116	"	"	159.36	159.36
"	"	88	"	"	159.36	159.36
"	"	149	"	"	159.36	159.36
"	"	165	"	"	159.36	159.36
"	"	171	"	"	159.36	159.36
"	"	99	"	"	159.36	159.36
"	"	251	"	"	159.36	159.36
"	"	"	"	"	159.36	159.36
"	"	29	"	"	159.36	159.36
"	"	55	"	"	159.36	159.36
"	"	63	"	"	159.36	159.36
"	"	66	"	"	159.36	159.36
"	"	73	"	"	159.36	159.36
"	"	78	"	"	159.36	159.36
"	"	173	"	"	159.36	159.36
"	"	256	"	"	159.36	159.36
"	"	27	"	"	159.36	159.36
"	"	74	"	"	159.36	159.36
"	"	76	"	"	159.36	159.36
"	"	83	"	"	159.36	159.36

Sheet No.

Name
Address

Miss Book done for Mrs. Hutchins

13th St

Aug 31	Bringing forward	8.11	37	Sept 30	M. Hutchins	101.65	159.36
"	"	8.0	1.0	Oct 31	"	101.65	159.36
"	"	1.11	3.52	Nov 30	"	101.65	159.36
"	"	1.12	1.22	Dec 31	"	101.65	159.36
"	"	1.13	1.13	Jan 30	"	101.65	159.36
"	"	2.21	1.13	Feb 31	"	101.65	159.36
"	"	2.21	7.54	Mar 30	"	101.65	159.36
"	"	9.3	1.0	"	"	101.65	159.36
"	"	1.11	7.5	"	"	101.65	159.36
"	"	1.57	6.0	"	"	101.65	159.36
"	"	1.61	5.60	"	"	101.65	159.36
"	"	2.00	1.09	"	"	101.65	159.36
"	"	3.0	1.53	"	"	101.65	159.36
"	"	3.7	5.3	"	"	101.65	159.36
"	"	6.0	3.92	"	"	101.65	159.36
"	"	9.7	3.11	"	"	101.65	159.36
"	"	1.17	2.34	"	"	101.65	159.36
"	"	1.21	9.7	"	"	101.65	159.36
"	"	1.77	1.49	"	"	101.65	159.36
"	"	5.9	2.44	"	"	101.65	159.36
"	"	1.17	2.11	"	"	101.65	159.36
"	"	1.50	2.0	"	"	101.65	159.36
"	"	2.17	1.87	"	"	101.65	159.36
"	"	1	3.11	"	"	101.65	159.36
"	"	4.0	1.40	"	"	101.65	159.36
"	"	8.0	1.41	"	"	101.65	159.36
"	"	1.79	1.04	"	"	101.65	159.36
"	"	1.27	1.67	"	"	101.65	159.36
"	"	2.17	2.0	"	"	101.65	159.36
"	"	2.26	0.57	"	"	101.65	159.36
"	"	1	7.7	"	"	101.65	159.36
"	"	3.9	30.00	"	"	101.65	159.36
"	"	4.2	1.02	"	"	101.65	159.36
"	"	7.0	7.0	"	"	101.65	159.36
"	"	13.0	2.6	"	"	101.65	159.36
"	"	11.1	1.11	"	"	101.65	159.36
"	"	7.9	1.61	"	"	101.65	159.36
"	"	8.5	7.6	"	"	101.65	159.36
"	"	6.2	7.20	"	"	101.65	159.36
"	"	7.1	2.16	"	"	101.65	159.36
"	"	8.7	2.30	"	"	101.65	159.36
"	"	1.11	1.60	"	"	101.65	159.36
"	"	1.24	0.57	"	"	101.65	159.36
"	"	8.6	7.5	"	"	101.65	159.36
"	"	1.13	1.77	"	"	101.65	159.36
"	"	1.12	1.77	"	"	101.65	159.36
"	"	1.19	1.77	"	"	101.65	159.36
"	"	1.5	0.67	"	"	101.65	159.36
"	"	8.0	1.20	"	"	101.65	159.36
"	"	9.3	7.8	"	"	101.65	159.36
"	"	9.6	3.05	"	"	101.65	159.36
"	"	1.17	1.77	"	"	101.65	159.36

Sheet No. _____

Name *Miss Doris Lane for Mr. MacCallister*Address *11 3472*

1911		1912		1913		1914	
<i>Apr 30</i>	<i>94</i>	<i>576</i>	<i>261</i>	<i>27</i>	<i>24</i>	<i>24</i>	<i>24</i>
<i>May 31</i>	<i>61</i>	<i>105</i>	<i>13</i>	<i>May 31</i>	<i>1153</i>	<i>74</i>	<i>1153</i>
	<i>62</i>	<i>13</i>	<i>June 30</i>		<i>1158</i>	<i>11</i>	<i>1158</i>
	<i>74</i>	<i>10</i>	<i>July 31</i>		<i>116</i>	<i>116</i>	<i>116</i>
	<i>93</i>	<i>16</i>				<i>116</i>	<i>116</i>
	<i>126</i>	<i>371</i>				<i>116</i>	<i>116</i>
	<i>128</i>	<i>61</i>				<i>116</i>	<i>116</i>
	<i>131</i>	<i>240</i>				<i>116</i>	<i>116</i>
<i>June 30</i>	<i>131</i>	<i>337</i>				<i>116</i>	<i>116</i>
<i>July 31</i>	<i>108</i>	<i>116</i>				<i>116</i>	<i>116</i>
	<i>108</i>	<i>200</i>				<i>116</i>	<i>116</i>
	<i>123</i>	<i>91</i>				<i>116</i>	<i>116</i>
	<i>121</i>	<i>174</i>				<i>116</i>	<i>116</i>
	<i>122</i>	<i>617</i>				<i>116</i>	<i>116</i>
	<i>122</i>	<i>761</i>				<i>116</i>	<i>116</i>

Sheet No. _____

Name *Maintenance of W.C. & S. B. Co. Salaries, 1916*Address *24093*

1911		1912		1913		1914	
<i>July 31</i>	<i>179</i>	<i>219</i>	<i>July 31</i>	<i>E. S. B. Co. Inc.</i>	<i>1020</i>	<i>219</i>	<i>219</i>
<i>Aug 31</i>	<i>11</i>	<i>210</i>	<i>Mar 31</i>	<i>"</i>	<i>1103</i>	<i>210</i>	<i>210</i>
<i>Sept 30</i>	<i>11</i>	<i>81</i>	<i>Apr 30</i>	<i>"</i>	<i>1115</i>	<i>211</i>	<i>211</i>
<i>June 30</i>	<i>108</i>	<i>1040</i>	<i>June 30</i>	<i>"</i>	<i>1117</i>	<i>1040</i>	<i>1040</i>
<i>July 31</i>	<i>122</i>	<i>1110</i>	<i>July 31</i>	<i>"</i>	<i>1162</i>	<i>1117</i>	<i>1117</i>

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Maintenance of Equipment of Steel Road Motor
1911-1912

1911		1912		1913		1914		1915	
Mar 31	Anchor	1	30	Mar 31	265	Mar 31	265	Mar 31	265
		24	24		24		24		24
		51	51		51		51		51
		55	55		55		55		55
		95	95		95		95		95
		115	115		115		115		115
		119	119		119		119		119
		12	12		12		12		12
		16	16		16		16		16
		27	27		27		27		27
		40	40		40		40		40
		41	41		41		41		41
		52	52		52		52		52
		67	67		67		67		67
		78	78		78		78		78
		86	86		86		86		86
		93	93		93		93		93
		94	94		94		94		94
		48	48		48		48		48
		68	68		68		68		68
		74	74		74		74		74
		73	73		73		73		73
		76	76		76		76		76
		93	93		93		93		93
		103	103		103		103		103
		106	106		106		106		106
		118	118		118		118		118
		121	121		121		121		121
		125	125		125		125		125
		135	135		135		135		135
		1	1		1		1		1
		40	40		40		40		40
		41	41		41		41		41
		42	42		42		42		42
		63	63		63		63		63
		87	87		87		87		87
		92	92		92		92		92
		107	107		107		107		107
		108	108		108		108		108
		109	109		109		109		109
		111	111		111		111		111
		6	6		6		6		6
		40	40		40		40		40
		47	47		47		47		47
		87	87		87		87		87
		95	95		95		95		95
		132	132		132		132		132

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Maintenance of Equipment of Sea World Makindu

14/105

1964

March 30

Kambui

119

May 31

125

June 30

101

July 31

106

1965

March 31

11261

April 30

11262

May 31

11263

June 30

11264

July 31

11265

11266

11267

11268

11269

11270

56

Sheet No. _____

Name _____

Address _____

Sheet No. 50

Name _____

Address _____

Moving Concrete Building Steel #2036.

1908		1909		1910	
Nov. 30 To Voucher	72	1,000	Feb. 27 By Gen. Expense	55	2,925
	88	1,924			
		3,924			7,255

J. V. Miller Labor & Material for

1909		1910		1911	
Feb. 27 To Voucher	98	1,93	Feb. 27 By L. M. Jones	554	1,93
Mar. 31 " " "	116	03	Mar. 31 " " "	554	03
Apr. 30 " " "	127	315	Apr. 30 " " "	566	210
May 30 " " "	126	621	May 30 " " "	577	621
Jun. 30 " " "	119	310	Jun. 30 " " "	588	710

Sheet No. 51

Name
Address

Mining & Exploration Co. of N.J. Labor & Material

1909		1909		1909	
July 31 To Voucher	87	261.67	July 31 By L.M. Inv	1579	261.67
Aug 31 " "	81	2.60	Aug 31 " " "	1580	2.60
Sept 31 " "	90	263.31	Sept 31 " " "	1581	263.31
Oct 31 " "	10	40.30	Oct 31 " " "	1582	40.30
Nov 31 " "	26	41.51	Nov 31 " " "	1583	41.51
Dec 31 " "	107	51.50	Dec 31 " " "	1584	51.50
Jan 31 " "	107	187.00	Jan 31 " " "	1585	187.00
Feb 31 " "	124	74.00	Feb 31 " " "	1586	74.00
Mar 31 " "	124	74.00	Mar 31 " " "	1587	74.00
Apr 31 To Voucher	101	500	Apr 31 " L.M. Inv	1588	500
May 31 " "	31	46.50	May 31 " " "	1589	46.50
June 31 " "	59	138.39	June 31 " " "	1590	138.39
July 31 " "	88	148.88	July 31 " " "	1591	148.88
Aug 31 " "	49	143.05	Aug 31 " " "	1592	143.05
Sept 31 " "	58	170.17	Sept 31 " " "	1593	170.17
Oct 31 " "	53	700	Oct 31 " " "	1594	700
Nov 31 " "	145	567.40	Nov 31 " " "	1595	567.40
Dec 31 " "	78	17.66	Dec 31 " " "	1596	17.66
Total	100	887.00	Total	1597	887.00

Joseph Merkle Labor & Material for

1909		1909		1909	
July 31 To Voucher	102	20	July 31 By L.M. Inv	1599	20
Aug 31 " "	119	23	Aug 31 " " "	1600	23
Sept 31 " "	260.1	20	Sept 31 " " "	1601	20
Oct 31 " "	260.1	23	Oct 31 " " "	1602	23
Nov 31 " "	260.1	23	Nov 31 " " "	1603	23
Dec 31 " "	260.1	23	Dec 31 " " "	1604	23

Sheet No. 52

Name
Address

George Meister L.M. for

1910		1910		1910	
July 31 To Voucher	9	1.50	July 31 By Invoice	1885	1.50
Aug 31 " "	114	25	Aug 31 " " "	1886	25
Sept 31 " "	88	21	Sept 31 " " "	1887	21
Oct 31 " "	108	21	Oct 31 " " "	1888	21
Nov 31 " "	140	30	Nov 31 " " "	1889	30
Dec 31 " "	105	150.00	Dec 31 " " "	1890	150.00
Jan 31 To Voucher	141	176.00	Jan 31 By L.M. Inv	1891	176.00
Feb 31 " "	80	200	Feb 31 " " "	1892	200
Mar 31 " "	251	50	Mar 31 " " "	1893	50
Apr 31 " "	181	21	Apr 31 " " "	1894	21
May 31 " "	181	80	May 31 " " "	1895	80
June 31 " "	1	21	June 31 " " "	1896	21

Joseph Meister L.M. for

1910		1910		1910	
July 31 To Voucher	88	130	July 31 By L.M. Inv	1897	130

Sheet No. 53

Name

Address

Would Housing

~~2201~~

1910		1910	
Aug 31 To Vouchers		Aug 31 By P. C. L. Linn	
11	11.47	2577	45520
97	29.97	"	2643
98	146.50	Sept 20	2548
100	42.4	Oct 31	2808
115	142.6	Nov 30	3068
66	10		
85	9.40		
97	341.58		
98	174.79		
96	2.96		
22	502		
93	437.38		
94	218.67		
96	157.34		
39	53.1		
34	77.8		
30	162.8		
128	32.5		
127	0.6		
	562.22		162.22

E. Mudd. L 4777

1910				1910			
Sept 31	To Voucher	96		Sept 31	By L & M Inv	28.5	96
Nov 20	"	119		Nov 30	"	103	21
1913				1913			
Sept 30	To Voucher	109		Sept 30	By L & M Inv	86.2	318
Nov 30	"	141		Nov 30	"	29.2	100
Jan 31	"	158		Dec 31	"	81.2	05
Mar 31	"	106		Mar 31	"	87.3	2.4

Sheet No. 5 of

Name _____
Address _____

W. S. Mallory Lm

[illegible]

Sheet No. _____

Name _____

Address _____

Machine 75 Hydraulic Service Blades #3270

1912		1913	
Step 25 J. L. Lumber 120		July 20, 1913 1385	50
Mar. 31 J. L. Lumber 120		Mar. 31 1913 1385	13.88

Machine 75 Hydraulic Service Blades #3270

1912		1913	
Mar. 31 J. L. Lumber 39		Mar. 31 1913 1385	129.27
Apr. 30 " " 120		Apr. 30 " " 1913 1385	135.52
May 31 " " 120		May 31 " " 1913 1385	142.66
June 30 " " 114		June 30 " " 1913 1385	147.33
July 31 " " 125		July 31 " " 1913 1385	149.66
Aug. 31 " " 129		Aug. 31 " " 1913 1385	150.71
Sept. 30 " " 116		Sept. 30 " " 1913 1385	151.71
Oct. 31 " " 109		Oct. 31 " " 1913 1385	152.71
Nov. 31 " " 122		Nov. 31 " " 1913 1385	153.71

Sheet No. _____

Name _____

Address _____

Machine 75 Hydraulic Service Blades #3270

1912		1913	
Mar. 31 J. L. Lumber 120		Mar. 31 1913 1385	179.2
Apr. 30 " " 120		Apr. 30 " " 1913 1385	180.2
May 31 " " 140		May 31 " " 1913 1385	181.2
June 30 " " 144		June 30 " " 1913 1385	182.2
July 30 " " 120		July 30 " " 1913 1385	183.2
Aug. 30 " " 120		Aug. 30 " " 1913 1385	184.2
Sept. 30 " " 120		Sept. 30 " " 1913 1385	185.2
Oct. 30 " " 120		Oct. 30 " " 1913 1385	186.2
Nov. 30 " " 120		Nov. 30 " " 1913 1385	187.2

Machine 75 Hydraulic Service Blades #3270

1912		1913	
Mar. 31 J. L. Lumber 120		Mar. 31 1913 1385	179.61
Apr. 30 " " 120		Apr. 30 " " 1913 1385	180.61
May 31 " " 140		May 31 " " 1913 1385	181.61
June 30 " " 144		June 30 " " 1913 1385	182.61
July 30 " " 120		July 30 " " 1913 1385	183.61
Aug. 30 " " 120		Aug. 30 " " 1913 1385	184.61
Sept. 30 " " 120		Sept. 30 " " 1913 1385	185.61
Oct. 30 " " 120		Oct. 30 " " 1913 1385	186.61
Nov. 30 " " 120		Nov. 30 " " 1913 1385	187.61

Sheet No. _____

Name _____

Address _____

Machine 1 Round 1 1/2 Square Revolving Pile 1 Cover
#3277

1973	1973	1973	1973
Mar 31 To Number 120	Mar 31 By E.S.B. In 725	Mar 31 To Number 120	Mar 31 By E.S.B. In 725
120	120	120	120
Make One Tattion #3290			
1973	1973	1973	1973
Mar 31 To Number 120	Mar 31 By E.S.B. In 725	Mar 31 To Number 120	Mar 31 By E.S.B. In 725
120	120	120	120

227-aka 22 Wooden Ringal #3229

1973	1973	1973	1973
Mar 31 To Number 120	Mar 31 By E.S.B. In 725	Mar 31 To Number 120	Mar 31 By E.S.B. In 725
120	120	120	120
1			

Sheet No. _____

Name _____

Address _____

Make Tattions

#3218

1973	1973	1973	1973
Mar 31 To Number 120	Mar 31 By E.S.B. In 725	Mar 31 To Number 120	Mar 31 By E.S.B. In 725
120	120	120	120
Make Tattions #3319			
1973	1973	1973	1973
Mar 31 To Number 170	Mar 31 By E.S.B. In 726	Mar 31 To Number 170	Mar 31 By E.S.B. In 726
Apr 30 " " 146	Apr 30 " " 146	Apr 30 " " 146	Apr 30 " " 146
H.H. 824%			

Sheet No. _____

Name _____
Address _____

Machine 18 Carbon Black Rheostat #3242

1913	Apr 30 To Balance	119	232	Apr 30 By 308 Indur	7401	11926
	" "	77		May 31 " " "	7753	2362
	" "	98		June 30 " " "	7667	11963
	" "	99				
	" "	137				
	" "	120				
May 31	" "	141				
June 30	" "	141				

Machine 50 White Trachet Bearings #3244

1913	Apr 30 To Balance	110	780	Apr 30 By 308 Indur	7409	780
------	-------------------	-----	-----	---------------------	------	-----

Sheet No. _____

Name _____
Address _____

Machine Work on Parts for S.C. Norton #3302

1913	Apr 30 To Balance	110	8221	Apr 30 By 308 Indur	7405	8221
------	-------------------	-----	------	---------------------	------	------

Machine 90 Hooded Parts #3317

1913	Apr 30 To Balance	110	1733	Apr 30 By 308 Indur	7406	1733
------	-------------------	-----	------	---------------------	------	------

Sheet No. _____

Name _____

Address

Motor Cases #3326

FOR DEBEN FORD, 510 HIGHT ST., NEWTON, N.J.

1213
Apr 30. Do Voucher. 140

6776 Apr 30 By J. Thoma Vols Inv 7418

6796

Machine 6 Long Annealing Pot & Cover 1913 12327

1913

Apr 30. To Voucher 1140

2835 Apr 30 By E.B. Co. Dr 7362

2.835

Sheet No. _____

Name _____

Address

Make Addition To 3 Hand Wheels: # 3334

NO. 00000000, 010 000000, 000000, 0.

1913
Apr 30 To Voucher 140

543 Apr 30. Thompson's Larr 7419.

4-11 a

Make 11 Drawing Tables

1913

Apr 30. To Voucher 140

3228 Apr. 30 By B.B. & Co. Dr. 7363.

9228

Sheet No. _____

Name
Address

Mabel Pro Sheet Saw Lamination

#3341

1913 Apr 30 To Lumber 140. June 30 " " 114	1913 Apr 30 By E.B.B. on Dr 420 77 June 30, " " " 7682	11949 77
--------------------------------------------------	--------------------------------------------------------------	-------------

1913 Mabel Outlines as Reported for Sub-During May 1913 #3350

Apr 30 To Lumber 140. May 31 " " 144	450 Apr 30 By E.B.B. on Dr 421 04 May 31 " " " 7644	450 04
-----------------------------------------	--------------------------------------------------------	-----------

Mabel Patterns

1913 Apr 30 To Lumber 110.	1913 #3352 033 Apr 30 By E.B.B. on Dr 421	583
-------------------------------	----------------------------------------------	-----

Sheet No. _____

Name
Address

Machine Shue East. Steel Pot

#3357

1913 May 31 To Lumber 67. 114	1913 May 31 By E.B.B. on Dr 421 3384	2368
-------------------------------------	--------------------------------------------	------

1913 Machine H.P. Lathing #3369

May 31 To Lumber 3369 114	10 May 31 By E.B.B. on Dr 421 11127 June 30, " " " 7682	11137 3347
June 30 " " 120 July 31 " " 129	3207 July 31, " " " 7762	210

Sheet No. _____

Name _____

Address _____

Mill & Lot 730 Carter
#3359

1913

May 31 To Lumber 145
June 30 " " 120

1913

May 31 By E.B. & Co. Inc. 7400
June 30 " " " 7606

1914

7814

1913

May 31 To Lumber 145
June 30 " " 120

Make One End Each Tallow #2601-5-6

1913

May 31 By E.B. & Co. Inc. 7400
June 30 " " " 7611

1914

1846
1886

1913

May 31 To Lumber 145

Make One Each Tallow #2601-5-6
#3359

1103

May 31 By E.B. & Co. Inc. 7405

1103

1913

May 31 To Lumber 145
June 30 " " 120

Make One Each Tallow #2599-2600

1913

May 31 By E.B. & Co. Inc. 7405
June 30 " " " 7610

1914

1992
1846

Sheet No. _____

Name _____

Address _____

Make Frame for 3 Transfer Cases
#3355

1913

June 30 To Lumber 125

1913

June 30 By E.B. & Co. Inc. 7618

1914

1748

1913

June 30 To Lumber 125

Make 500 Sticks Rosin & Resin Separators
#3357

1913

June 30 By E.B. & Co. Inc. 7620

1914

2150

Sheet No. _____

Name _____

Address _____

Machine/Work on Lumber Leaf
#3397

1273	June 30. To Lumber: 125	1258	June 30 By J. L. Miller & Co 642	1258
	July 31 " " 129		210 July 31 " " " 7520	210

1423	Machine/Work	Sheet Total 7	1413	123178
Aug 31. To Lumber 116	2381	Aug 31 By E. C. C. Co. Lumber 1927	2381	
Sept 30 " 18	5132	Sept 30 " " " " 8038	5132	

Sheet No. _____

Name _____

Address _____

Make One Each Lattens #2800-2801
#3078

1274	Jan 31. Lumber 127	618	Jan 31 By J. L. Miller & Co 642	618
1275	Jan 31. Lumber 127	1570	Jan 31 By J. L. Miller & Co 642	1570

1276	Make One Each Lattens	1277	1278	1279
Jan 31. Lumber 127	1278	Jan 31 By J. L. Miller & Co 642	1279	1280

Sheet No. _____

Name
AddressMake One Each of Tables 1510-11-12-13-14
15610

1914

1916

Jan. 31. Luncher	127	3927	Jan. 31. Edmund B. D. L. L. 15610	3927
July 28. "	1321	630	July 28. "	631

1914

Machine last Sunday 15611

July 28. Luncher	1321	7206	July 28. B. D. L. L. 15611	7206
------------------	------	------	----------------------------	------

Sheet No. _____

Name
AddressMake Old Lumber Segment Signed by you
15614

1914

1916

Jan. 31. Luncher	29	3125	Jan. 31. B. D. L. L. 15614	3125
------------------	----	------	----------------------------	------

1915

Should be signed by you

May 31. Luncher	135	20	May 31. Edmund B. D. L. L. 15616	12656
	143	1551	June 30. "	1157
	193	10448		9626
June 30.	13	5790		
	251	3727		

Sheet No. _____

Name _____

Address _____

W. C. Garrison, Jr. at Cedar St. Station
1871

1871	June 31	Balance	193	64	May 31	Lab. Inc.	Sur	1005	64
1871	July 31	"	117	43	July 31	"	"	1077	43
1871	Aug 31	"	29	10	July 29	"	"	1104	40

1871	July 31	Balance	206	141	July 31	Edw. & Son	Sur	1077	141
------	---------	---------	-----	-----	---------	------------	-----	------	-----

Sheet No. _____

Name _____

Address _____

W. C. Garrison, Jr.
1871

1871	Sept 30	Balance	200	140	Sept 30	Edw. & Son	Sur	1005	140
1871	Oct 31	"	119	35	Oct 31	"	"	1155	35

1871	Oct 31	Balance	177	112	Oct 31	Edw. & Son	Sur	1077	112
------	--------	---------	-----	-----	--------	------------	-----	------	-----

Name _____
Address _____

Waco Draft Couplings (two)

1911		1912	
Jan	Feb	Jan	Feb
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

W. H. Mason, Esq.

1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100

Sheet No.

Name.....
Address.....

Make up 44 & 46 Pinning up 1 Box
44 x 56

[illegible]

Mac mine 3 Castings exp 6.45.22
11.2.60

July 31 ¹⁹¹⁶	Voucher	122	1030	July 31 ¹⁹¹⁶	Pharm. H. & M.E.	11715	1030
-------------------------	---------	-----	------	-------------------------	------------------	-------	------

Sheet No. _____

Name _____

Address _____

Machine 11 Steel Castings

#11261

July 31 Voucher 125 13158 July 31 Cash 191173 13158

Sheet No. _____

Name _____

Address _____

Make One Balance & P's Castings Run from

#11261

July 31 Voucher 125 13158 July 31 Balance 191173 13158

Make Castings #11261 per 191173

July 31 Voucher 125 13158 July 31 Cash 191173 13158

Make 12 Specimen Screen Drivers

#11270

July 31 Voucher 125 1506 July 31 Cash 191173 1506

AC
N
C

Sheet No. _____

Name _____

Address _____

Mike Pax Celing Board
4 x 7 1/2

7006	July 31	Voucher	125	630	July 31	WES. R. Co. R.	11737	630
------	---------	---------	-----	-----	---------	----------------	-------	-----

Mike Parton
4 x 7 1/2

7006	July 31	Voucher	125	369	July 31	ESB R.	2111737	369
------	---------	---------	-----	-----	---------	--------	---------	-----

Sheet No. _____

Name _____

Address _____

Mike Parton 3020-3021-3024-3
4 x 5 1/2

7006	July 31	Voucher	125	730	July 31	ESB R.	2111737	730
------	---------	---------	-----	-----	---------	--------	---------	-----

Machinist Phyllis Gueling
4 x 7 1/2

7006	July 31	Voucher	125	366	July 31	Am. M. Co. R.	11737	366
------	---------	---------	-----	-----	---------	---------------	-------	-----

Mc

C

Sheet No. _____

Name _____

Address _____

Machine Paul Carl Iron Range
4292

July 31	1906	12x	1006	July 31	1906	12x	1006
---------	------	-----	------	---------	------	-----	------

Machine 3000 15 Photos of characteristic Power of the B.C.C.
4292

July 31	1906	12x	1006	July 31	1906	12x	1006
---------	------	-----	------	---------	------	-----	------

Sheet No. _____

Name _____

Address _____

Machine One Minter Pattern
4292

July 31	1906	12x	1006	July 31	1906	12x	1006
---------	------	-----	------	---------	------	-----	------

Machine 1000 15 Photos of characteristic Power of the B.C.C.
4292

July 31	1906	12x	1006	July 31	1906	12x	1006
---------	------	-----	------	---------	------	-----	------

Sheet No. _____

Name _____

Address _____

Sheet No. 118

Name _____

Address _____

J. Meilner Linn

1911	Oct 31	To voucher	114	1911	Oct 31	By Linn	4952	21
------	--------	------------	-----	------	--------	---------	------	----

1913	Sept 30	To Linn	122	R Murphy	Sept 30	By Linn	5261	30
	Oct 31	" "	109		Oct 30	" "	8060	15
		" "	156		Dec 31	" "	8113	06

M. Mills Linn

1911	Dec 30	To voucher	122	1911	Dec 30	By Linn	5227	30
------	--------	------------	-----	------	--------	---------	------	----

Machine for Iron mix #2097

1914	Oct 24	To Linn	114	1914	Oct 24	By Linn	5504	625
	Mar 30	" "	127		Mar 30	" "	5536	247
					11097			11097

Sheet No. _____

Name _____
Address _____Machine Annualing Totol Cover
#3424

1912				1913			
July	31	To Lumber	109	1129	July 31	By S.S. & Co. Inc	7759
Sept	30	" "	109	250	Sept 30	" " " "	7790
				1129			250

1912				1913			
Make 170 Detail #43426							
July	31	To Lumber	129	855	July 31	By S.S. & Co. Inc	7777
Aug	31	" "	116	246	Aug 31	" " " "	7777
				855			246

1912				1913			
Machine Carling #3466							
Aug	30	To Lumber	71	27	Aug 31	By S.S. & Co. Inc	7777
Sept	30	" "	109	11077	Sept 30	" " " "	7790
				4714			11055
							4714

Sheet No. _____

Name _____
Address _____Machine Work on Ring
#3449

1912				1913			
Aug	31	To Lumber	116	787	Aug 31	By S.S. & Co. Inc	7777
							787

1912				1913			
Make Patterns as required for Inspecting Machine							
Aug	31	To Lumber	116	6209	Aug 31	By S.S. & Co. Inc	7777
							6209

1912				1913			
Make 100 Wheel Pins #3457							
Aug	31	To Lumber	116	994	Aug 31	By S.S. & Co. Inc	7777
Sept	30	" "	30	298	Sept 30	" " " "	8036
							994
							298

Sheet No. _____

Name
AddressMake Miller
13464

1912		1913		1914		1915	
Aug 31	To Lumber	116	951	Aug 31	By J. B. B. Co. Lumber	7918	910
Sept 30	"	12	170	Sept 30	"	8027	1655
"	"	48	300	Oct 31	"	8139	2197
"	"	109	930	Nov 31	"	8196	980
C. F. 31	"	57	300	Dec 31	"	8700	800
"	"	50	1838	Jan 30	"	8796	950
"	"	50	57	Feb 31	"	9199	4594
Jan 31	"	35	425	Mar 31	"	9139	63
"	"	100	30	Apr 30	"	9904	63
"	"	107	570				
Mar 31	"	15	850				
June 30	"	16	455				
"	"	106	525				
July 31	"	26	2150				
"	"	47	1850				
1915	"	88	88				

Misc Work done for Mr. Hutchings

1912		1913		1914		1915	
Aug 31	To Lumber	116	3131	Aug 31	By M. R. H. Lumber	7937	5907
"	"	16	125	Sept 30	"	8050	5590
"	"	23	10				
"	"	38	226				
"	"	26	75				
"	"	60	69				
"	"	79	100				
"	"	90	1935				
"	"	106	254				
Sept 30	"	18	380				
"	"	48	5312				
"	"	57	689				
"	"	74	255				
"	"	86	2769				
"	"	180	172				
1915	"	109	21402				

Make Blum/Tatung 1450

1912		1913		1914		1915	
Aug 31	To Lumber	116	56	Aug 31	By S. S. B. Co. Lumber	7999	56
Sept 30	"	109	9163	Sept 30	"	7990	9163

Sheet No. _____

Name
AddressMake H Maple Block
43482

1913		1914		1915			
Sept 30	To Lumber	109	128	Sept 30	By R. L. B. Co. Lumber	7990	158

Machine Parts 3472

1912		1913		1914		1915	
Sept 30	To Lumber	109	4916	Sept 30	By S. S. B. Co. Lumber	7991	4916
Oct 31	"	122	3509	Oct 31	"	8106	3509

Make details for three trucks

1912		1913		1914		1915	
Sept 30	To Lumber	109	6508	Sept 30	By S. S. B. Co. Lumber	7998	6508
Oct 31	"	122	5510	Oct 31	"	8107	5510
Nov 30	"	140	358	Nov 30	"	8228	358

179

Sheet No. _____

Name _____
Address _____Machine Casting Pattern
#31195

1913	Sept 30	To Lumber	109	10023	Sept 30	By E. B. B. Co. Inc	7999	10023
	Oct 31	"	122	1807	Oct 31	"	8106	1807

1913

Make 3 Blower #31199

Sept 30	To Lumber	109	1807	Sept 30	By E. B. B. Co. Inc	7999	1807
Oct 31	"	122	2073	Oct 31	"	8106	2073

1913

Make Wood Blyskal

Sept 30	To Lumber	109	474	Sept 30	By E. B. B. Co. Inc	7999	474
Oct 31	"	122	2073	Oct 31	"	8106	2073

180

Sheet No. _____

Name _____
Address _____Motor Brake Forks
#3511

1913	Sept 30	To Lumber	109	5530	Sept 30	By E. B. B. Co. Inc	7999	5530
------	---------	-----------	-----	------	---------	---------------------	------	------

1913

Make 400 Stages Point & Beechworth #3513

Sept 30	To Lumber	109	900	Sept 30	By E. B. B. Co. Inc	8032	900
---------	-----------	-----	-----	---------	---------------------	------	-----

1913

Make 2 Pedestals #3516

Sept 30	To Lumber	109	1213	Sept 30	By E. B. B. Co. Inc	7999	1213
---------	-----------	-----	------	---------	---------------------	------	------

Mc
2
C

Sheet No. _____

Name
AddressMachine One Year
#3518

1911
Sept 30 To Lumber 109.
577 Sept 30 By E. C. W. Co. Jan 80.47 577

1912
Make Car for Red Iron Lumber 3518
Oct 31 To Lumber 109
Nov 30 " " 10.11
Dec 31 " " 116
1913
1/19 Oct 31 By E. C. W. Co. Jan 81.07
6.11 Oct 31 " " " 52.18
179 Dec 31 " " " 133.21 179

1912
Make Car for Red Iron Lumber 3518
Oct 31 To Lumber 109
39.11 Oct 31 By E. C. W. Co. Jan 81.01 39.11

Sheet No. _____

Name
AddressMachine One Year
#3522

1912
Oct 31 To Lumber 109
Nov 30 " " 10.11
133.21
1913
Oct 31 By E. C. W. Co. Jan 81.06
Nov 30 " " " 52.18
179

1913
Make Car for Red Iron Lumber 3518
Oct 31 To Lumber 109
39.11 Oct 31 By E. C. W. Co. Jan 81.01 39.11

1912
Make Car for Red Iron Lumber 3518
Oct 31 To Lumber 109
39.11 Oct 31 By E. C. W. Co. Jan 81.01 39.11

Sheet No. _____

Name _____
Address _____Make Pattern
13545

1913	Oct 31	To Lumber	122	20	Oct 31	By E.D. Borden	8107	30	
	Nov 30	"	141	256	Nov 30	"	8228	256	

1913	Oct 31	To Lumber	122	2422	Oct 31	By E.D. Borden	8107	2422	

1913	Oct 31	To Lumber	122	201	Oct 31	By E.D. Borden	8107	201	

Sheet No. _____

Name _____
Address _____Make One Back Cloth #2765-64-65-66
13535

1913	Oct 31	To Lumber	122	1136	Oct 31	By E.D. Borden	8107	1136	

1913	Oct 31	To Lumber	122	788	Oct 31	By E.D. Borden	8107	788	
	Nov 30	"	141	2926	Nov 30	"	8228	2926	

1913	Oct 31	To Lumber	122	469	Oct 31	By E.D. Borden	8107	469	
	Nov 30	"	141	3708	Nov 30	"	8228	3708	
	Dec 31	"	156	3708	Dec 31	"	8327	3708	
	Jan 31	"	147	1372	Jan 31	"	8422	1372	

Sheet No. _____

Name
Address

Make/One Each Path

3541

1912

Oct 31	To Lumber	121	524	Oct 31	By E.S.B. Co. Lm	5107	524
--------	-----------	-----	-----	--------	------------------	------	-----

1912

Make/One Each Path

3541

Nov 30	To Lumber	35	3140	Nov 30	By E.S.B. Co. Lm	5107	3140
Jan 31	"	127	1010	Jan 31	" " " "	5100	1050

1912

Make/One Each Path

3541

Nov 30	To Lumber	144	3274	Nov 30	By E.S.B. Co. Lm	5107	3274
--------	-----------	-----	------	--------	------------------	------	------

Sheet No. _____

Name
Address

Make/One Each Path # 3541

1912

Nov 30	To Lumber	144	1651	Nov 30	By E.S.B. Co. Lm	5107	1651
Dec 31	"	156	4164	Dec 31	"	5107	4164

1912

Make/One Each Path

3541

Dec 31	Lumber	76	550	Dec 31	By E.S.B. Co. Lm	5107	2148
Jan 31	"	156	1898	Jan 31	" " "	5100	5025
Feb 28	"	104	8324	Feb 28	" " "	5103	1059
Mar 31	"	107	1077	Mar 31	" " "	5100	1678
Apr 30	"	116	1677	Apr 30	" " "	5107	3354

1912

Make/20 Castings

3541

Nov 30	Lumber	156	3957	Nov 30	By E.S.B. Co. Lm	5107	3957
Dec 31	"	127	1049	Dec 31	" " "	5100	1049

Mc

J

Name
Address

Machine & Castings #3574

1912
Dec 31 Voucher 156. 1917 Dec 31 F.B.B. Co. Inc. 3351 1917

1912
1914 31 Voucher 156. 3377 1914 31 F.B.B. Co. Inc. 3351 3377
Jan 31 " 174 3219 1914 31 " " " 3467 3219

1912
1912
Dec 31 Voucher 156. 1507 Dec 31 F.B.B. Co. Inc. 3351 1507

Name
Address

Make Out Pattern #3583

1912
Dec 31 Voucher 156. 3477 Dec 31 F.B.B. Co. Inc. 3351 3477

1912
1912
Dec 31 Voucher 156. 1850 Dec 31 F.B.B. Co. Inc. 3351 1850

1912
1912
Dec 31 Voucher 156. 750 Dec 31 F.B.B. Co. Inc. 3351 750

139

Sheet No. _____

Name
Address

Make Pattern as Required for Opening #3590

¹⁹⁰⁷									
1896-97	Jan 31	Kramer	156	1890	Jan 31	E.S.C. & Co.	1351	1890	Jan 31
	"	"	127	190	"	"	8867	190	"

1912

Make 8 Drums
1914 # 3584

Jan 31. Lumber 127	3157 Jan 31 Edw L B L Lnr 8467	3159
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1244

Make One Pattern per sketch 13596

Jan 31	London	127.	6.10	Jan 31	Wilmshurst	1206.	6.15
--------	--------	------	------	--------	------------	-------	------

140

Sheet No. _____

Name
Address

Machine Work to Make & Assemble 3 Hydraulic Crushers

1914		1915		1916		1917	
Feb. 28	Louche	13.11	241123	Feb. 28	E. S. S. Gooden	8078	241139
"	"	28	316	Mar. 31	"	8671	4628
Mar. 31	"	10.6	4628	Apr. 30	"	8808	24537
Apr. 30	"	11.0	23	May. 31	"	8870	41610
May 31	"	11.6	24537	June 30	"	8461	9, 2, 25
"	"	12.0	231				
"	"	12.3	1878				
"	"	12.5	3887				
"	"	13.1	144				
"	"	27	242				
"	"	166	1, 5, 5				
June 30							

1914

Make 875 H.P.K. Lantien Slides

July 28	13.21	999 July 28	1776	999
Mar 31	106.	1770 Mar 31	"	1770
Apr 30	116.	39.1%	Apr 30	39.1%

1948

Make 100 Whels 136.20

Mar 31	106.	Sold	Mar 31	By E. C. W. to Linn	87 17	516
May 31	103.	328	May 31	" " "	89 16	328

Sheet No. _____

Name
Address

Make Tattlers as per B/O #3630

1914

Mar 31	Lumber	106	1259	Mar 31	By E. S. B. Co. Inc	1874	1259
--------	--------	-----	------	--------	---------------------	------	------

1914

Make Tattlers 1214 #3631

Mar 31	Lumber	106	3156	Mar 31	By E. S. B. Co. Inc	1874	3156
--------	--------	-----	------	--------	---------------------	------	------

1914

Make 9 Tattlers 1214 #3632

Mar 31	Lumber	106	1105	Mar 31	By E. S. B. Co. Inc	1874	1105
Apr 30	"	116	21	Apr 30	"	1813	21

Sheet No. _____

Name
Address

Make Lumber B/O #3640

1914

Mar 31	Lumber	106	1894	Mar 31	By E. S. B. Co. Inc	1874	1894
--------	--------	-----	------	--------	---------------------	------	------

1914

Make Lumber for Blanking 2 Top 1214 #3641

Mar 31	Lumber	106	630	Mar 31	By E. S. B. Co. Inc	1874	630
Apr 30	"	81	1504	Apr 30	"	1811	307.59
"	"	110	30	May 31	"	1892	581.44
"	"	116	32.5	June 30	"	1964	359.14
May 31	"	68	15	July 31	"	9062	1232.84
"	"	101	370				
"	"	111	21				
"	"	115	579.88				
June 30	"	25	204				
"	"	27	230				
"	"	103	09				
July	"	106	2547.71				
"	"	136	1232.84				

1914

Make 6 Sulphur Totals 1214 #3642

Apr 30	Lumber	47	471	Apr 30	By E. S. B. Co. Inc	1874	70.50
"	"	57	2041	May 31	"	1897	82.03
"	"	91	110	June 30	"	9003	153.64
"	"	107	70				
"	"	116	4476				
"	"	110	73.23				
"	"	61	1800				
"	"	103	1508				
"	"	107	58				
"	"	115	11669				
June 30	"	27	1122.82				

Sheet No. _____

Name _____
Address _____Make One Gate & Guide for Same
#3641

1911		1912		1913		1914	
Apr 30	Lumber	116	840	Apr 30	Edwin S. B. Lumber	8813	840
May 31	"	103	25	May 31	"	8876	25

1911		Machine 4 Leasing of #660		1912		1913	
Apr 30	Voucher	116	2740	Apr 30	Edwin S. B. Lumber	8818	2740

1911		1912		1913		1914	
Machine 6 Brongof Legating d							
Apr 30	Lumber	116	3826	Apr 30	Edwin S B Lumber	8813	3826
May 31	" "	112	"	May 31	"	"	"

Sheet No. _____

Name _____
Address _____Make One Sattin #146
#3166

1911		1912		1913		1914	
May 31	Lumber	115	4027	May 31	Edwin S. B. Lumber	8876	4027

1911		1912		1913		1914	
Machine One Leasing of #257-58-59							
May 31	Lumber	115	3024	May 31	Edwin S. B. Lumber	8876	3024

1911		Machine 11 ¹⁹¹² Leasing of #660		1913		1914	
May 31	Lumber	115	2802	May 31	By Edwin C. H. Lumber	8917	2802
June 30	"	106	2898	June 30	" " "	9009	2898

Sheet No. _____

Name _____
Address _____

Make 16 Turned Wood Pedestals #3671

1914

May 31	Voucher	115.	857	May 31	By E.S.B. on Dr	8877	857
--------	---------	------	-----	--------	-----------------	------	-----

1914

May 31	By E.S.B. on Dr	8877	857
--------	-----------------	------	-----

1914

May 31	Voucher	115.	630	May 31	By E.S.B. on Dr	8877	630
--------	---------	------	-----	--------	-----------------	------	-----

1914

May 31	By E.S.B. on Dr	8877	630
--------	-----------------	------	-----

1914

May 31	Voucher	115.	462	May 31	By E.S.B. on Dr	8877	462
June 30	"	106.	190	June 30	"	8969	190.

1914

May 31	By E.S.B. on Dr	8877	462
June 30	"	8969	190.

Sheet No. _____

Name _____
Address _____

Make One Tattler's Lark 13163-4-5-6 #36712

1914

May 31	Voucher	115.	1352	May 31	By E.S.B. on Dr	8877	1352
--------	---------	------	------	--------	-----------------	------	------

1914

May 31	By E.S.B. on Dr	8877	1352
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1914

May 31	Voucher	115.	542	May 31	By E.S.B. on Dr	8877	542
--------	---------	------	-----	--------	-----------------	------	-----

June 30	"	71.	208	June 30	"	9001	354.54
---------	---	-----	-----	---------	---	------	--------

July 31	"	106.	322	July 31	"	9107	288.14
---------	---	------	-----	---------	---	------	--------

August 31	"	35.	310	August 31	"	9207	27.41
-----------	---	-----	-----	-----------	---	------	-------

September 30	"	38.	12.	September 30	"	9307	20.59
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October 31	"	89.	185.	October 31	"	9407	20.59
------------	---	-----	------	------------	---	------	-------

November 30	"	114.	24.	November 30	"	9507	20.59
-------------	---	------	-----	-------------	---	------	-------

December 31	"	136.	142	December 31	"	9607	20.59
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January 31	"	56.	110.	January 31	"	9707	20.59
------------	---	-----	------	------------	---	------	-------

February 30	"	90.	267	February 30	"	9807	20.59
-------------	---	-----	-----	-------------	---	------	-------

March 31	"	95.	270	March 31	"	9907	20.59
----------	---	-----	-----	----------	---	------	-------

April 30	"	115.	2079	April 30	"	10007	20.59
----------	---	------	------	----------	---	-------	-------

May 31	"	115.	112	May 31	"	10107	112
--------	---	------	-----	--------	---	-------	-----

June 30	"	115.	112	June 30	"	10207	112
---------	---	------	-----	---------	---	-------	-----

July 31	"	115.	112	July 31	"	10307	112
---------	---	------	-----	---------	---	-------	-----

August 31	"	115.	112	August 31	"	10407	112
-----------	---	------	-----	-----------	---	-------	-----

September 30	"	115.	112	September 30	"	10507	112
--------------	---	------	-----	--------------	---	-------	-----

October 31	"	115.	112	October 31	"	10607	112
------------	---	------	-----	------------	---	-------	-----

November 30	"	115.	112	November 30	"	10707	112
-------------	---	------	-----	-------------	---	-------	-----

December 31	"	115.	112	December 31	"	10807	112
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Mc

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147

Sheet No. _____

Name _____
Address _____Make One Each Pattern 1 2561 9.62°
#3611

1914				1914			
July 31	Thunder	115	28	July 31	By E. S. B. Co. Linn	8779	28
June 30	"	106	8020	June 30	"	8769	8020

1914				1914			
June 30	Thunder	106	521	June 30	Edwin S. B. Co. Linn	8769	521
July 31	"	136	30	July 31	"	9066	30
Aug 30	"	56	65	Aug 30	"	9205	101.53
"	"	90	10096	Sept 30	"	9301	223.56
Sept 30	"	66	70	Oct 31	"	9463	208.87
"	"	75	222.86	Nov 30	"	9691	227.70
Oct 31	"	127	688	Dec 31	"	9894	265.25
"	"	111	19	Jan 31	"	9670	72.31
Nov 30	"	115	701.90	Feb 28	"	9743	620
"	"	105	60	"	"	9777	105
"	"	109	227.10	Mar 31	"	9812	106.63
Dec 31	"	150	9	"	"		111.59
1915	"	152	266.35				
Jan 31	"	138	72.91				
Feb 27	"	141	550				
Mar 31	"	148	1.48				

1914				1914			
June 30	Thunder	106	10233	June 30	Edwin S. B. Co. Linn	8769	10233
July 31	"	136	227.47	July 31	"	9066	227.47
Aug 30	"	79	30	Aug 30	"	9205	262.5
"	"	90	189.90	Oct 31	"	9463	240
Oct 31	"	115	260	Nov 30	"	9691	110.7
Nov 30	"	21	15	Dec 31	"	9894	272.91
Dec 31	"	109	109.79				
	"	136	73				
	"	150	272.01				

148

Sheet No. _____

Name _____
Address _____Make 63 Inch Locks
#3704

1914				1914			
July 31	Thunder	75	600	July 31	E. S. B. Co. Linn	9071	610
"	"	89	10	Aug 30	"	9215	267.7
Aug 30	"	90	2677	Sept 30	"	9303	7.77
Sept 30	"	94	272	Oct 31	"	9466	7.61
Oct 31	Thunder	779	761				

1914				1914			
July 31	Thunder	38	1000	July 31	J. O. B. Co. Linn	9107	152.5
"	"	136	52.5				

1914				1914			
July 31	Thunder	106	7663	July 31	E. S. B. Co. Linn	9111	7663
Aug 30	"	79	222	Aug 30	"	9197	222

149

Sheet No. _____

Name _____
Address _____Make Necessary Patterns for Film Dyeing Machine
#3702

1921

July 31
Aug 30Lumber
"136
90

1921

July 31
Aug 30E. S. B. Co. Inc.
"9112
91583778
719

Sheet No. _____

Name _____
Address _____Make One Each Pattern #1163-1163
#3711

1921

July 31
Aug 30Lumber
"136
90

1921

July 31
Aug 30E. S. B. Co. Inc.
"9114
9159478
237

150

1921

July 31
Aug 30Lumber
"136
90

1921

July 31
Aug 30E. S. B. Co. Inc.
"9113
9158

476

1921

Aug 30

Lumber
"

90

1921

Aug 30

E. S. B. Co. Inc.
"9190
9191

2001

1921

July 31
Aug 30
Sept 30Lumber
"
"136
90
95

1921

July 31
Aug 30
Sept 30E. S. B. Co. Inc.
"
"9079
9208
92111240
23
135

1921

Aug 30

Lumber
"

90

1921

Aug 30

E. S. B. Co. Inc.
"9191
9192

129

Mc
0.2

151

Sheet No.

Name
AddressMachine Work on One Boiler Plate
\$3715

1911

Aug 30
Sept 30

Lumber

90

1911

Aug 30 L.S.B. on Lumber 9215

107

Sheet No.

Name
AddressMaking Round Tapped Blugs
\$3732

152

1911

Sept 30

Lumber

95

1911

Sept 30 L.S.B. on Lumber 9312

1766

1911

Aug 30
Sept 30
Dec 31
Feb 27

Lumber

90

45

45

136

25

3123

Aug 30

Sept 30

Aug 30

Sept 30

Sept 30

L.S.B. on Lumber

9151

11779

9500

9717

348

3123

Aug 30

Sept 30

Aug 30

Sept 30

Sept 30

L.S.B. on Lumber

9151

11779

9500

9717

348

1911

Sept 30
Oct 31

Lumber

95

111

Make 100 Wheel Pins
\$3434

Sept 30

Oct 31

L.S.B. on Lumber

9297

9166

9166

9166

9166

688

305

305

305

305

1911

Aug 30
Sept 30
Dec 31

Lumber

90

135

S. Morris

L. M.

60

Aug 30

Sept 30

Oct 31

L.S.B. on Lumber

9222

11444

11444

11444

11444

60

Aug 30

Sept 30

Oct 31

L.S.B. on Lumber

9222

11444

11444

11444

11444

1911

Sept 30

Lumber

90

Make Pattern #175
\$175

Sept 30

Oct 31

L.S.B. on Lumber

9297

9166

9166

9166

9166

688

305

305

305

305

Mc
O
N

Sheet No. _____

Name
AddressMake One New Style Corn Pocket Springing Die
12747

1911		1912		1913		1914	
Oct 31	Lumber	80	5430	Oct 31	E. S. B. Co. Lumber	9312	5430
"	"	115	1150	Oct 31	"	9411	12749
"	"	115	17660	"	"		

1914		1915		1916		1917	
Oct 30	Lumber	90	2070	Oct 30	E. S. B. Co. Lumber	9058	2070
Oct 31	"	115	111	Oct 31	"	9383	111
Nov 30	"	109	02	Nov 30	"	9470	02

1918		1919		1920		1921	
Oct 31	Lumber	115	725	Oct 31	E. S. B. Co. Lumber	9415	50877
"	"	115	50145	Nov 30	"	9499	94201
Nov 30	"	105	764	Feb 25	"	9777	105
"	"	106	6480	"	"		
"	"	109	26977	"	"		
Feb 27	"	116	105	"	"		

Sheet No. _____

Name
AddressMake Patterns for Model S Kinetograph
12713

1911		1912		1913		1914	
Oct 31	Lumber	115	327	Oct 31	E. S. B. Co. Lumber	9375	327
Nov 30	"	109	3902	Nov 30	"	9468	3902
Dec 31	"	152	2301	Dec 31	"	9577	2301

1915		1916		1917		1918	
Nov 30	Lumber	21	90	Nov 30	E. S. B. Co. Lumber	9513	10379
"	"	108	31	Dec 31	"	9596	2912
"	"	108	1326	"	"		
Dec 31	"	156	50	"	"		
"	"	152	2562	"	"		

1919		1920		1921		1922	
Nov 30	Lumber	21	108	Nov 30	E. S. B. Co. Lumber	9513	114
"	"	109	31	Dec 31	"	9577	4843
"	"	136	19	"	"		
Dec 31	"	152	11825	"	"		

Sheet No. _____

Name
Address

Make Out Book & List for Blanking Cards
13751

1911		1912		1913	
Nov 30	Lumber	21	176	Nov 30	S. B. Co. Inc. 9511
Dec 31		109	1025	Dec 31	" 9598
		186	267		
		152	8607		

1911		1912		1913	
Nov 30	Lumber	64	10	Nov 30	S. B. Co. Inc. 9571
Dec 31		94	208	Dec 31	" 9581
		107	151		
		152	577		

1911		1912		1913	
Nov 30	Lumber	91	2316	Nov 30	S. B. Co. Inc. 9577
Dec 31		109	1011	Dec 31	" 9621
		152	543		

Sheet No. _____

Name
Address

Make Out Record Cabinets
13773

1911		1912		1913	
Nov 30	Lumber	109	11547	Nov 30	S. B. Co. Inc. 9540
Dec 31		116	64	Dec 31	" 9772

1911		1912		1913	
Nov 30	Lumber	109	1079	Nov 30	S. B. Co. Inc. 9510

1911		1912		1913	
Nov 30	Lumber	109	573	Nov 30	S. B. Co. Inc. 9511

Mc

O

Sheet No.

18

Address

Make One Rough Pattern

1947		1948		1948	
Dec 31	Transfer 152	121	Dec 31	By E.S.B. to Linn 9601	121

1944										Make Pattern 1944 3800									
Der 31		Kuchen		152		332		Der 31		BfEdum/SBbDm		966		332					

1914		Make Payment		1914 3501	
Dec 31	Transfer	152	71	Dec 31	By Ed. B. & Son
					9607
					71

1914
Dec 31 Voucher 152 91 Dec 31 By E. L. B. Co. Inc 9608 91

Sheet No. _____

Name _____

Address

Make Pattern # 2939 B
3805

190				190			
Jan 31	Banker	138	120	Jan 31	Exp. Edison S. B. Baden 7670.		120

1915	Make Pattern #2949 ^a 1915 #2886					
Jan. 31	Hour	138	202	Jan. 31	By Ernest B. L. L. 966	202

<i>Make One Pattern</i>					
¹⁹¹⁵ Jan 31	Chamber	135'	109	¹⁹¹⁵ Jan 31	Lg. Sides 126' In g/c.
					109

Mc
N
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Sheet No. _____

Name _____

Address _____

Make Outing 13123

1912	Jan 31	Voucher	138	219	Jan 31 By Edward B. Borden 766	219
	July 28	"	137	105	July 28 " " " 773	105

1915 Make 7 Round Teds to 488224

Jan 31	Voucher	138	320	July 21 By Edward B. Borden 9743	320
July 27	"	137			

1915 Make One Die 16 Make Outside 16 1/2

Apr 31	Voucher	22	242.33	Apr 31 By Edward B. Borden 9934	242.33
"	"	57	77	May 31 " " " 10047	77
May 31	"	58			
May 31	"	99	87		

Sheet No. _____

Name _____

Address _____

Machine Patterns for School 13123

1916	Jan 31	Voucher	140	2116	Jan 31 Edward B. Borden 1000	2116
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1916 Machine 16 1/2 Die 16 1/2

Jan 31	Voucher	140	100	Jan 31 Edward B. Borden 1000	100
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1916 Machine 16 1/2 Die 16 1/2

July 27	Voucher	14	212	July 27 Edward B. Borden 1000	212
		126	2022		

Mc

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Sheet No.

Name _____

Address

Male Shaft couplings

18.06.66

Feb. 29	Uncher	107	22	Feb. 29	Edinistichum 24	10929	238
		12%	210				

Maple Bluffs						
1976						
Sky 29	Number	126	333	Sky 29	Eileen Thorne Hobbs	1981

1914		1915		1916	
Mar 31	Wander	86	20	Mar 31	36.00
		91	20.00	Apr 29	17.00
Apr 30	"	67	10		17.00
	"	86	29.6		
	"	64	120.0		

Sheet No. _____

Abstract

Address

Machine No. 6. A Pipe
#489

1459

Mar 31	Number	119	1223	Mar 31	E. L. H. Lee	1127	1203
--------	--------	-----	------	--------	--------------	------	------

Mining Trench Experiments #3686.

Maintenance Laboratory Sample # 415-B			
Date			
Apr 23	Toucher	96	1508
May 31	"	135	1548
June 30	"	42	1567
	"	185	1606
July 31	"	122	1655
			1685
			1734
			1773
			1812
			1851
			1890
			1929
			1968
			2007
			2046
			2085
			2124
			2163
			2202
			2241
			2280
			2319
			2358
			2397
			2436
			2475
			2514
			2553
			2592
			2631
			2670
			2709
			2748
			2787
			2826
			2865
			2904
			2943
			2982
			3021
			3060
			3099
			3138
			3177
			3216
			3255
			3294
			3333
			3372
			3411
			3450
			3489
			3528
			3567
			3606
			3645
			3684
			3723
			3762
			3801
			3840
			3879
			3918
			3957
			3996
			4035
			4074
			4113
			4152
			4191
			4230
			4269
			4308
			4347
			4386
			4425
			4464
			4503
			4542
			4581
			4620
			4659
			4698
			4737
			4776
			4815
			4854
			4893
			4932
			4971
			5010
			5049
			5088
			5127
			5166
			5205
			5244
			5283
			5322
			5361
			5400
			5439
			5478
			5517
			5556
			5595
			5634
			5673
			5712
			5751
			5790
			5829
			5868
			5907
			5946
			5985
			6024
			6063
			6102
			6141
			6180
			6219
			6258
			6297
		</	

Sheet No. _____

Name _____

Address _____

Mabe on Bushong
#4179

May 21	Voucher	125	965	May 21	M.G. Bus. Card Bk.	11205	965
--------	---------	-----	-----	--------	--------------------	-------	-----

Mabe Wood Catkins #4181

May 21	Voucher	125	1198	May 21	E.P. Bus.	Bus 11205	1298
--------	---------	-----	------	--------	-----------	-----------	------

Mabe Catering Service #4185

May 21	Voucher	125	215	May 21	E.P. Bus.	Bus 11205	215
--------	---------	-----	-----	--------	-----------	-----------	-----

Sheet No. _____

Name _____

Address _____

Machining 21 C.D. Manifolded
#4186

May 21	Voucher	125	1868	May 21	E.P. Bus.	Bus 11205	1868
June 30		108	2081	June 30		11570	2081

Machining 6 C.D. Refrigeration Pet. Covers

May 21	Voucher	125	1417	May 21	E.P. Bus.	Bus 11205	1417
June 30		108	768	June 30		11205	768

Mabe Preliminary Drawings - Construction Restaurant E.S.B. & Hwy

June 30	Voucher	101	57	June 30	M.G. Bus. Card Bk.	11205	57
---------	---------	-----	----	---------	--------------------	-------	----

Mc
O
N

Sheet No. _____

Name _____

Address *Make Preliminary Savings Contribution with the Erection
of Building for Training Cabinet, 2 N.Y.C.*

June 30	Voucher	101	1303	June 30	M.E. Sec.	11587	1303
July 31	"	122	12312	July 31	"	11587	1314

Make Patterns #4229

June 30	Voucher	101	901	June 30	E.D.D. Sec.	11581	901
---------	---------	-----	-----	---------	-------------	-------	-----

Make 50 Voucher Receipts #4231

June 30	Voucher	101	915	June 30	M.E. Sec. & 11584	915	
July 31	"	22	348	July 31	"	11701	944
		122	600				

Sheet No. _____

Name _____

Address _____

*Make Cos. Receipts**#4235*

June 30	Voucher	101	141	June 30	M.E. Sec. & 11584	141	
July 31	"	122	58	July 31	"	11701	348
		122	348				348

Make 5 Edging Receipts #4245

June 30	Voucher	101	925	June 30	M.E. Sec.	11573	925
---------	---------	-----	-----	---------	-----------	-------	-----

Make Patterns #4251

June 30	Voucher	101	1001	June 30	M.E. Sec. & 11566	1001	
July 31	"	122	111	July 31	"	11712	111

Mc
N
O

Sheet No. _____

Name
Address

Machine Work on 2 Pairs for Balderson's Livery
11 N 2 St.

July 31 ¹⁹¹⁴ Pouches 122 1220 July 31 ¹⁹¹⁴ E.S.D.C. E.C.H.E.D. 1180 1220

Machine Work of Clothing for Balderson's Livery

July 31 ¹⁹¹⁴ Pouches 122 1220 July 31 ¹⁹¹⁴ E.S.D.C. E.C.H.E.D. 1180 1220

Machine Work of Clothing for Balderson's Livery

July 31 ¹⁹¹⁴ Pouches 122 1220 July 31 ¹⁹¹⁴ E.S.D.C. E.C.H.E.D. 1180 1220

McCall Mrs.

50

Mc

ON

National Phone Co	1
Labors Material for	
Rehr W H	50
Labors Material for	5
North Jersey Bank & Co	
Labors Mat for	3
Metal Aggregate	56 1/2
Wm Nickel	4
Ironing Machine	\$2124
New York Patients Co	
Labors Mat for	50
Newbury George	
L R M for	5
New Style Sams	\$224
New Hats Samms	\$251
Negators & Smith	\$255
Nicolai Adamson	7
Mat - see Apt	106
Nephthaline	\$283
Nephthalene	\$294
Neuter B & Co. Am	101
Ney & Co. Mercantile Co	\$121
Newcomb & Sons Ltd	\$128
Porter & Sloan	
Newbury Rapids	10
New York & Hudson Mills	\$50
New York & Hudson Mills	\$507
Labors Property	107
New York & Hudson Mills	\$510
New York & Hudson Mills	\$507
New York & Hudson Mills	\$507

Sheet No. 3Name
Address

Nickel Hydrate

2105

1909

Aug 31 To Voucher

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

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142

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148

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152

153

154

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156

157

158

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160

1909

Aug 31 By C.S. B. Jan 1255

1374

1450

1504

1625

1794

1796

1883

2006

2079

2267

2371

2538

2700

2870

3010

3170

3319

3477

3625

3774

3923

4072

4221

4370

4519

4668

4817

4966

5115

5264

5413

5562

5711

5860

6009

6158

6307

6456

6605

6754

6903

7052

7201

7350

7499

7648

7797

7946

8095

8244

8393

8542

8691

8840

Sheet No. 3Name
AddressNickel Hydrate *Report 3021*

1911		1911			
Feb 25 To Voucher	102	2945	Arch furnace	3426	3945
" " " "	103	2958	By Clabey Day	3426	3954
" " " "	104	2971	Mar 31	3492	11682
Mar 31	105	2984	Apr 30	3578	11682
" " " "	106	2997	May 31	3671	11682
" " " "	107	3010	June 30	3764	11682
" " " "	108	3023	July 31	3857	11682
Apr 30	109	3036	Aug 31	3950	11682
" " " "	110	3049	Sept 30	4043	11682
" " " "	111	3062	Oct 31	4136	11682
" " " "	112	3075	Nov 30	4229	11682
May 31	113	3088	Dec 31	4322	11682
" " " "	114	3101	Jan 30	4415	11682
" " " "	115	3114	Feb 29	4508	11682
June 30	116	3127	Mar 30	4601	11682
" " " "	117	3140	Apr 30	4694	11682
" " " "	118	3153	May 31	4787	11682
July 31	119	3166	June 30	4880	11682
" " " "	120	3179	July 31	4973	11682
" " " "	121	3192	Aug 31	5066	11682
Aug 31	122	3205	Sept 30	5159	11682
" " " "	123	3218	Oct 31	5252	11682
" " " "	124	3231	Nov 30	5345	11682
Sept 30	125	3244	Dec 31	5438	11682
" " " "	126	3257	Jan 30	5531	11682
" " " "	127	3270	Feb 29	5624	11682
Oct 31	128	3283	Mar 30	5717	11682
" " " "	129	3296	Apr 30	5810	11682
" " " "	130	3309	May 31	5903	11682
Nov 30	131	3322	June 30	6000	11682
" " " "	132	3335	July 31	6093	11682
Dec 31	133	3348	Aug 31	6186	11682
Jan 31	134	3361	Sept 30	6279	11682
Feb 29	135	3374	Oct 31	6372	11682
Mar 30	136	3387	Nov 30	6465	11682
Apr 30	137	3400	Dec 31	6558	11682
May 31	138	3413	Jan 30	6651	11682
June 30	139	3426	Feb 29	6744	11682
July 29	140	3439	Mar 30	6837	11682
Aug 29	141	3452	Apr 30	6930	11682
Sept 29	142	3465	May 31	7023	11682
Oct 29	143	3478	June 30	7116	11682
Nov 29	144	3491	July 31	7209	11682
Dec 29	145	3504	Aug 31	7302	11682
1912					
Apr 30 To Voucher	146	3504	Apr 30 By SS Bond	7302	11682

Sheet No. 7Name
Address

Charles Nicolai Ltr

1911		1911			
June 30 To Voucher	45	44	June 30 By SS Bond	4355	44
June 29	57	45	June 29	4416	45
Aug 31	121	46	Aug 31	4477	46
Oct 31	64	47	Oct 31	4538	47
Nov 30	135	48	Nov 30	4599	48
Dec 31		49	Dec 31	4660	49
1912					
Apr 30 To Voucher	135	49	Apr 30 By SS Bond	4720	49

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

W. C. C. P. B. L. L.

1910

Part. Fred. B. L. L.
April 30 *1910*
May 31 *1911*
June 30 *1912*

1911

Part. Fred. B. L. L.
April 30 *1911*
May 31 *1912*
June 30 *1913*

Part. Fred. B. L. L.
April 30 *1914*
May 31 *1915*
June 30 *1916*

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____

New Equipment for New Dept.

1151

1946
Apr 20 Voucher 94

1946
1.50 Apr 24 P.O. Co. Inc. 67 W. 11 St.

1.50

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

C. Has. Norton C. 711.

50

1913

Mar. 31. To Lumber	120.
Apr. 30	140.
May 31	117.
June 30	175.
July 31	179.
Aug. 31	116.
Sept. 30	129.
Oct. 31	51.
Nov. 30	17.
Dec. 31	154.
Jan. 31	156.
Feb. 28	127.
Mar. 31	134.
Apr. 30	106.
May 31	116.
June 30	106.
July 31	136.
Aug. 30	95.
Sept. 31	130.
Oct. 31	152.
Nov. 31	276.
Dec. 31	101.

1913

Mar. 31. By LTM Inv	7301.	54.
Apr. 30	7433.	125.
May 31	7554.	111.
June 30	7707.	94.
July 31	7828.	60.
Aug. 31	7946.	48.
Sept. 30	8066.	69.
Oct. 31	8166.	170.
Nov. 31	8293.	89.
Dec. 31	8415.	50.
Jan. 31	8576.	81.
Feb. 28	8611.	16.
Mar. 31	8735.	49.
Apr. 30	8846.	29.
May 30	9031.	152.
June 31	9130.	24.
July 30	9346.	05.
Aug. 31	9576.	51.
Sept. 31	10771.	27.
Oct. 31	11600.	180.

1913

May 31. To Lumber 140.

Necessary Repairs on Glass Exhibition Cell

1913

May 31. By C. & S. B. Inv.	7452.	62.
----------------------------	-------	-----

Sheet No. _____

Name _____
Address _____

Necessary Work on Ford Auto. 43307

1873 June 30. To Cash 44	1873 June 30. By E. S. S. Co. Dr 7598	65
-----------------------------	------------------------------------------	----

Sheet No. 160

Name _____
Address _____

new style trays # 2289

1911			1911		
Mar. 31	To Voucher	117	Mar. 31	By Exp. Bldg. 3635	911
" "	" "	118			
			300		
			311		811

Int as per Bp't #2495

1911	June 30. To Voucher	1.17	1.05	1911	June 30. By F. S. Bell, Dr. 4313	1.55
	" " " " "	1.17	53			
			1.05			1.08

New England Machinery Corp. East

[illegible]

naphthalene * 2863

1912	Jan 31 20 Voucher	138	1912	Jan 31 By Condensate Co	1715
------	-------------------	-----	------	-------------------------	------

Sheet No. 101

Name
Address

E. E. Nestor Low

1912

Sept 30 To Voucher 117 120 Sept 30 By L. H. J. 6518 120

Necessary drawing for Mervin's belt

1912
Dec 31 To Voucher 120 120 Dec 31 By J. J. 6518 120

Necessary drawing for Michael's belt

1912
Mar 31 To Voucher 120 120 Mar 31 By J. J. 6518 120
Apr 30 " " 120 120 Apr 30 " " 6518 120

Sheet No. 102

Name
AddressNecessary drawing for making concrete pipe forms
#34791912
Sept 30 To Voucher 74 109
1913
70 Sept 30 By S. G. P. 8023 1145

Necessary drawing for Mervin's belt

1912
Sept 31 To Voucher 106 80
Oct 31 " 127 80
Nov 31 " 106 80
Dec 31 " 116 80
Jan 31 " 115 80
Feb 31 " 106 80
1913
Mar 31 By L. H. J. 8023 1145
Apr 31 " " 8023 1145
May 31 " " 8023 1145
June 31 " " 8023 1145

Challens

Sheet No. _____

Name _____

Address _____

New Lay Out of Machinery Works Blank
18810

1876		1877		1878		1879		1880	
July 28	127	8250	July 28	By Edmond	10727	8250			
Mar 31	73	3329	Mar 31	"	9526	4220			
"	192	2140	Apr 30	"	9924	1121			
"	173	53	May 31	"	4216	123			
"	130	11	Jun 30	"	10329	36634			
"	171	32033	Jul 31	"	10727	60248			
Aug 30	73	3761	Aug 31	"	10746	48848			
Sept 30	252	263	Jan 31	"	10862	55418			
Oct 31	252	453							
Nov 30	144	36634							
"	212	44							
Dec 31	226	60248							
Jan 31	90	48848							
"	146	1700							
"	146	48848							

H. B. Co. 51

Harling Tables (Make 2)

1876		1877		1878		1879		1880	
Sept 31	226	2081	Dec 31	By F. H. L. L.	10727	2081			
Jan 31	20	1107	Jan 31	"	10777	14579			
"	39	172	Feb 29	"	10790	24026			
"	64	2260	Mar 31	"	11193	32453			
"	51	450							
"	177	876							
"	130	32							
"	148	11110							
Feb 29	3	12500							
"	29	46							
"	30	29							
"	53	906							
"	64	324							
"	112	160							
"	120	11							
Mar 31	126	47226							
"	130	12523							

Notice Case for Neutralizing Process

1876		1877		1878		1879		1880	
Apr 30	13	14106	Apr 29	By A. C. L. L.	11402	50371			
"	58	1176	May 31	"	11402	17926			
"	82	31203	"	"		16520			
"	84	11866							
May 31	25	52231							
"	14	20104							
"	72	5377							
"	90	60							
"	163	60							

Sheet No. _____

Name _____

Address _____

Machinery Drawings of Works Blip
P. H. L. L.

1876		1877		1878		1879		1880	
May 31	135	6354	May 31	By P. H. L. L.	11222	6354			
June 30	108	2135	June 30	"	11222	2135			

Name _____
Address _____

[illegible]

Sheet No. 6

Name
Address

One Separator (by Ballentine) #2699

[illegible]

Name
Address

Ore Separator (by Ballentine) 2699

1912	1912	1912	1912	1912	1912
June 29	20.5	307.58	June 29	61.8	3068.27
" "	4.2	70.2	July 1	62.49	1.9778
" "	6.5	76.94	July 31	62.95	3.25713
" "	12.1	1.00	Aug 31	65.25	1.1617
" "	14.5	4.41	Sept 30	66.98	1.6969
July 31	40.0	150.09	Oct 31	67.78	1.8098
" "	41.0	16.79	Nov 30	68.54	1.7322
" "	42.0	86.2	Dec 31	70.18	2.5871
" "	70.0	70.12	Jan 31	71.55	1.5718
" "	70.0	8.0	Feb 28	71.55	2.7978
" "	70.0	7.0			
" "	14.0	16.1			
Aug 31	33	12.51			
" "	88	17.26			
" "	101	2.40			
" "	123	3.0			
" "	129	14.76			
Sept 30	32	12.0			
" "	34	42.77			
" "	36	103.4			
" "	78	2.00			
Oct 31	121	113.35			
" "	30	19.70			
" "	37	11.33			
" "	91	6.60			
Nov 30	147	7.94			
" "	29	4.25			
" "	53	2.20			
" "	121	16.66			
Dec 31	110	13.00			
" "	18	11.82			
" "	106	11.1			
1913	155	303.82			
Jan 31	157	147.18			
Feb 28	35	5.22			
" "	40	75.36			
" "	45	20.76			
" "	110	2.9			
" "	116	28.80			
" "	124	1.20			
July 28	132	125.36	Mar 31	75.26	20.039
Mar 31	37	11.37	Apr 30	75.26	3.678
" "	41	1.34	May 31	75.26	3.1263
" "	70	18.40			
" "	103	5.00			
" "	120	16.00			
Apr 30	129	3.00			
" "	140	2.61			
May 31	48	2.03			
" "	74	16.10			
" "	96	2.5			
" "	180	2.0			
" "	189	7.38			

Name
Address

Ore Separator (by Ballentine) 12699

1912	1912	1912	1912	1912	1912
June 30	14.0	70.23	June 30	76.86	208.98
" "	67	1.60	July 31	77.16	297.20
" "	80	6.78	Aug 31	79.01	1.5714
" "	120	129.46	Sept 30	80.18	1.885
July 31	33	2.81			
" "	40	16.70			
" "	129	107.19			
Aug 30	77	1.00			
Sept 30	116	133.19			
" "	30	1.3			
" "	109	1.24			

Address

15

Name _____

J. F. Ott

Long

1911		1912		1913		1914		1915	
June 29	To Voucher	1415	126 June 19	By Term Bond	6124		126		
July 31	" "	1555	15 July 31	" "	1925		15		
Aug 31	" "	18	18 Aug 31	" "	7225		18		
			23				23		
June 30	To Cash	1750	26 June 30	By Term Bond	7704		26		
July 31	" "	161	15 July 31	" "	7500		5745		
" "	" "	179	57 Oct 30	" "	7661		153		
Sept 30	" "	109	173 Oct 31	" "	8168		254		
Oct 31	" "	127	702 Oct 31	" "	8261		126		
Nov 30	" "	156	1716 Nov 31	" "	8585		355		
Dec 31	" "	127	355 Dec 30	" "	8812		160		
Jan 31	" "	116	160 May 31	" "	8933		2072		
Feb 31	" "	97	1917 May 31	" "	9204		77		
Mar 31	" "	105	65 July 31	" "	9427		110		
" "	" "	165	1755 Aug 31	" "	9679		40		
Apr 30	" "	90	60 Sep 30	" "	9757		107		
May 31	" "	188	70 Oct 30	" "	9961		768		
June 30	" "	141	165 Nov 30	" "	10771		3737		
July 31	" "	250	768 Dec 31	" "	10768		53		
Aug 31	" "	293	3737 Jan 31	" "	10552		196		
Sept 30	" "	333	53 Feb 31	" "	10777		261		
Oct 31	" "	176	176 Mar 31	" "	10777		143		
Nov 30	" "	200	261 Mar 31	" "	10777		277		
Dec 31	" "	35	143 May 31	" "	10777		17		
Jan 31	" "	276	379 June 30	" "	11008		303		
Mar 31	" "	119	18 July 31	" "	11771		26		
May 31	" "	151	333				377		
June 30	" "	108	26						
July 31	" "	121	377						

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

L. Oude Jr.

1911

Apr 30 Touchdown Rd

1911

26 Apr 29 L. & M. Rd. 11.25

26

023

Sheet No. _____

Name _____

Address _____

Sheet No. 50

Name _____

Address _____

J. F. Ott Labor & Material for

1908

Mar 31 To Voucher	71.
Apr 30	58.
May 31	80.
June 30	77.
July 31	77.
Aug 31	56.
Sept 30	96.
Oct 31	104.
Nov 30	90.
Dec 31	79.
1909 Jan 31	109.
Feb 27	79.
Mar 31	91.
Apr 30	104.
May 31	111.
June 30	84.
July 31	108.
Aug 31	108.
Sept 30	113.
Oct 31	104.
Nov 30	113.
Dec 31	133.
1910 Jan 31	115.
Feb 28	90.

1908

Mar 31 By L.M. Invoice	61.
Apr 30	122.
May 31	196.
June 30	262.
July 31	324.
Aug 31	318.
Sept 30	1481.
Oct 31	586.
Nov 30	579.
Dec 31	671.
1909 Jan 30	797.
Feb 27	866.
Mar 31	928.
Apr 30	1043.
May 31	1085.
June 30	1165.
July 31	1253.
Aug 31	1343.
Sept 30	1415.
Oct 31	1491.
Nov 30	1572.
Dec 31	1674.
1910 Jan 31	1764.
Feb 28	1842.

J. P. Ott Labor & Material for

1908

Mar 31 To Voucher	71.
June 30	77.
July 31	77.
Aug 31	23.
Nov 30	80.
Dec 31	90.
1909 Jan 31	97.
Feb 30	107.
Mar 31	104.
Apr 30	111.
May 31	108.
June 30	119.
July 31	129.
Aug 31	120.
Sept 30	117.
Oct 31	117.
Nov 30	111.
Dec 31	144.
1910 Jan 24	50.
Apr 30	141.
Nov 30	21.
Dec 31	33.
Total	137.

1908

Mar 31 By L.M. Invoice	65.
June 30	263.
July 31	335.
Nov 30	580.
Dec 31	670.
1909 Jan 30	726.
Apr 30	1004.
May 31	1086.
June 30	1343.
July 31	1467.
Aug 31	1572.
Sept 30	1674.
Oct 31	1764.
Nov 30	1842.
Dec 31	1920.
1910 Jan 24	2003.
Apr 30	2123.
May 31	2200.
Nov 30	2300.
Dec 31	2300.

1909

Mar 31 To Voucher	57.
Total	57.

1909

Mar 31 By L.M. Invoice	730.
Total	730.

Name _____
Address _____

J. F. Ott Labor & Material for

1978		1979		1980		1981		1982	
Mar 31	To Voucher	103.		720	Mar 31 By L.M. Jones	1842		720	
Apr 30	" "	118		660	Apr 30	" "	1988		
Oct 31	" "	93		378	Oct 31	" "	2320		615
" " " "	" "	96.		240	Nov 30	" "	2481		1943
Nov 30	" "	21.		179	Dec 31	" "	3246		1945
" " " "	" "	39.		72	Mar 31	" "	3756		2457
" " " "	" "	11		2	Apr 30	" "	3923		2990
Dec 31	" "	129.		708	May 31	" "	4155		3638
" " " "	" "	104		30	June 30	" "	4327		4006
Mar 31	" "	116		354	July 31	" "	4580		4408
Apr 30	" "	114		348	Aug 31	" "	4666		4675
" " " "	" "	112		510	Sep 30	" "	5106		4850
May 31	" "	98		149	Jan 31	" "	5382		4850
" " " "	" "	117		207	Feb 29	" "	5422		5000
" " " "	" "	115		187	Mar 31	" "	5668		5238
June 30	" "	118		918	Apr 30	" "	5877		5793
July 31	" "	111		815					5337
" " " "	" "	112		102					
Aug 31	" "	119		120					
" " " "	" "	120		119					
Nov 30	" "	119		120					
Jan 31	" "	135		120					
Feb 29	" "	144		132					
Mar 31	" "	127		132					
Apr 30	" "	142		142					

137.40
Louis & Co Labor & Material for

[illegible]

Sheet No. _____

Name _____
Address _____

One Back Pattern #21198^a-2499^b #3273

1943		1943		1943	
Mar 31	120	Mar 31	120	Mar 31	120
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
15	15	15	15	15	15
16	16	16	16	16	16
17	17	17	17	17	17
18	18	18	18	18	18
19	19	19	19	19	19
20	20	20	20	20	20
21	21	21	21	21	21
22	22	22	22	22	22
23	23	23	23	23	23
24	24	24	24	24	24
25	25	25	25	25	25
26	26	26	26	26	26
27	27	27	27	27	27
28	28	28	28	28	28
29	29	29	29	29	29
30	30	30	30	30	30
31	31	31	31	31	31
32	32	32	32	32	32
33	33	33	33	33	33
34	34	34	34	34	34
35	35	35	35	35	35
36	36	36	36	36	36
37	37	37	37	37	37
38	38	38	38	38	38
39	39	39	39	39	39
40	40	40	40	40	40
41	41	41	41	41	41
42	42	42	42	42	42
43	43	43	43	43	43
44	44	44	44	44	44
45	45	45	45	45	45
46	46	46	46	46	46
47	47	47	47	47	47
48	48	48	48	48	48
49	49	49	49	49	49
50	50	50	50	50	50
51	51	51	51	51	51
52	52	52	52	52	52
53	53	53	53	53	53
54	54	54	54	54	54
55	55	55	55	55	55
56	56	56	56	56	56
57	57	57	57	57	57
58	58	58	58	58	58
59	59	59	59	59	59
60	60	60	60	60	60
61	61	61	61	61	61
62	62	62	62	62	62
63	63	63	63	63	63
64	64	64	64	64	64
65	65	65	65	65	65
66	66	66	66	66	66
67	67	67	67	67	67
68	68	68	68	68	68
69	69	69	69	69	69
70	70	70	70	70	70
71	71	71	71	71	71
72	72	72	72	72	72
73	73	73	73	73	73
74	74	74	74	74	74
75	75	75	75	75	75
76	76	76	76	76	76
77	77	77	77	77	77
78	78	78	78	78	78
79	79	79	79	79	79
80	80	80	80	80	80
81	81	81	81	81	81
82	82	82	82	82	82
83	83	83	83	83	83
84	84	84	84	84	84
85	85	85	85	85	85
86	86	86	86	86	86
87	87	87	87	87	87
88	88	88	88	88	88
89	89	89	89	89	89
90	90	90	90	90	90
91	91	91	91	91	91
92	92	92	92	92	92
93	93	93	93	93	93
94	94	94	94	94	94
95	95	95	95	95	95
96	96	96	96	96	96
97	97	97	97	97	97
98	98	98	98	98	98
99	99	99	99	99	99
100	100	100	100	100	100

One Wood Pattern

1931		1932		1933		1934		1935		1936		1937		1938		1939		1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030																																																																														
1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496	1497	1498	1499	1500	1501	1502	1503	1504	1505	1506	1507	1508	1509	1510	1511	1512	1513

Sheet No. _____

Name _____

Address _____

One Field Park Town #2246

1913 Mar 31 To Lumber 120.	282	1913 Mar 31 By S.B. Co. In Sur 725.	282.
1913 Mar 31 To Lumber 120.		1913 Mar 31 By S.B. Co. In Sur 725.	41704

One Bank Pattern #2248

1913
Mar 31 By S.B. Co. In Sur 725.

One Bank Pattern #2248

1913 Mar 31 To Lumber 120.	3783	1913 Mar 31 By S.B. Co. In Sur 725.	37834
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Sheet No. _____

Name _____

Address _____

One Rough Pattern

#2295

1913 Mar 31 To Lumber 120.	195	1913 Mar 31 By S.B. Co. In Sur 725.	1951.
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One Rough Pattern #2296

1913 Mar 31 To Lumber 120.	201	1913 Mar 31 By S.B. Co. In Sur 725.	2011.
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Sheet No.

Name _____
Address _____

One Rectifier Exhibit + Table:

3294

[illegible]

One Rough Pattern

~~3303~~

[illegible]

Sheet No. _____

Name _____
Address _____

J.P. Q. 14.

1873		1872	
Apr 30	3.26	Apr 30	By M Drw 94.24
May 31	"	May 31	" " " 91.77
June 30	"	June 30	" " " 88.11
July 31	"	July 31	" " " 89.21
Aug 31	"	Aug 31	" " " 93.96
Sept 30	"	Sept 30	" " " 103.66
Oct 31	"	Oct 31	" " " 101.83
Nov 30	"	Nov 30	" " " 104.91
Dec 31	"	Dec 31	" " " 106.51
Jan 30	"	Jan 30	" " " 116.01
Feb 30	"	Feb 30	" " " 120.01
Mar 30	"	Mar 30	" " " 124.01
Apr 30	"	Apr 30	" " " 128.01
May 30	"	May 30	" " " 132.01
June 30	"	June 30	" " " 136.01
July 30	"	July 30	" " " 140.01
Aug 30	"	Aug 30	" " " 144.01
Sept 30	"	Sept 30	" " " 148.01
Oct 30	"	Oct 30	" " " 152.01
Nov 30	"	Nov 30	" " " 156.01
Dec 30	"	Dec 30	" " " 160.01
Jan 31	"	Jan 31	" " " 164.01
Feb 31	"	Feb 31	" " " 168.01
Mar 31	"	Mar 31	" " " 172.01
Apr 31	"	Apr 31	" " " 176.01
May 31	"	May 31	" " " 180.01
June 31	"	June 31	" " " 184.01
July 31	"	July 31	" " " 188.01
Aug 31	"	Aug 31	" " " 192.01
Sept 31	"	Sept 31	" " " 196.01
Oct 31	"	Oct 31	" " " 200.01
Nov 31	"	Nov 31	" " " 204.01
Dec 31	"	Dec 31	" " " 208.01
Jan 32	"	Jan 32	" " " 212.01
Feb 32	"	Feb 32	" " " 216.01
Mar 32	"	Mar 32	" " " 220.01
Apr 32	"	Apr 32	" " " 224.01
May 32	"	May 32	" " " 228.01
June 32	"	June 32	" " " 232.01
July 32	"	July 32	" " " 236.01
Aug 32	"	Aug 32	" " " 240.01
Sept 32	"	Sept 32	" " " 244.01
Oct 32	"	Oct 32	" " " 248.01
Nov 32	"	Nov 32	" " " 252.01
Dec 32	"	Dec 32	" " " 256.01
Jan 33	"	Jan 33	" " " 260.01
Feb 33	"	Feb 33	" " " 264.01
Mar 33	"	Mar 33	" " " 268.01
Apr 33	"	Apr 33	" " " 272.01
May 33	"	May 33	" " " 276.01
June 33	"	June 33	" " " 280.01
July 33	"	July 33	" " " 284.01
Aug 33	"	Aug 33	" " " 288.01
Sept 33	"	Sept 33	" " " 292.01
Oct 33	"	Oct 33	" " " 296.01
Nov 33	"	Nov 33	" " " 300.01
Dec 33	"	Dec 33	" " " 304.01
Jan 34	"	Jan 34	" " " 308.01
Feb 34	"	Feb 34	" " " 312.01
Mar 34	"	Mar 34	" " " 316.01
Apr 34	"	Apr 34	" " " 320.01
May 34	"	May 34	" " " 324.01
June 34	"	June 34	" " " 328.01
July 34	"	July 34	" " " 332.01
Aug 34	"	Aug 34	" " " 336.01
Sept 34	"	Sept 34	" " " 340.01
Oct 34	"	Oct 34	" " " 344.01
Nov 34	"	Nov 34	" " " 348.01
Dec 34	"	Dec 34	" " " 352.01
Jan 35	"	Jan 35	" " " 356.01
Feb 35	"	Feb 35	" " " 360.01
Mar 35	"	Mar 35	" " " 364.01
Apr 35	"	Apr 35	" " " 368.01
May 35	"	May 35	" " " 372.01
June 35	"	June 35	" " " 376.01
July 35	"	July 35	" " " 380.01
Aug 35	"	Aug 35	" " " 384.01
Sept 35	"	Sept 35	" " " 388.01
Oct 35	"	Oct 35	" " " 392.01
Nov 35	"	Nov 35	" " " 396.01
Dec 35	"	Dec 35	" " " 400.01
Jan 36	"	Jan 36	" " " 404.01
Feb 36	"	Feb 36	" " " 408.01
Mar 36	"	Mar 36	" " " 412.01
Apr 36			

One coil

3322

7262	7262	7262
Cyr 30. 20 Number 140.	Cyr 30. 20 Number 140.	Cyr 30. 20 Number 140.

Sheet No. _____

Name _____
Address _____

One Each Pattern #3061

1913 May 31 To Lumber 148	1913 May 31 By S.D.B. Borden 1484	1486
1913 May 31 To Lumber 148	One Ring of Pattern #3075 1913 May 31 By S.D.B. Borden 1485	1480.

1913 May 31 To Lumber 148	One Ring of Pattern #3070 1913 May 31 By S.D.B. Borden 1485	338
1914 Jan 31 Lumber 127	One Each Pattern #2808" & 2809" 1914 Feb 6 1914 Jan 31 By S.D.B. Borden 1485	641

Sheet No. _____

Name _____
Address _____

Operation of Hfg. Express Elevator & Crane from Dec. 1911 to 1913

Dec 31 To Lumber 65	1913 Jan 31 S.D.B. Borden 1484	1486
76	1913 May 31 " " 1485	1487
705	1913 May 31 " " 1486	1488
216	1913 May 31 " " 1485	1489
212	1913 May 31 " " 1486	1490
216	1913 May 31 " " 1485	1491
1	1913 May 31 " " 1486	1492
39	1913 May 31 " " 1485	1493
46	1913 May 31 " " 1486	1494
120	1913 May 31 " " 1485	1495
104	1913 May 31 " " 1486	1496
145	1913 May 31 " " 1485	1497
30	1913 May 31 " " 1486	1498
93	1913 May 31 " " 1485	1499
216	1913 May 31 " " 1486	1500
126	1913 May 31 " " 1485	1501
18	1913 May 31 " " 1486	1502
118	1913 May 31 " " 1485	1503
32	1913 May 31 " " 1486	1504
62	1913 May 31 " " 1485	1505
68	1913 May 31 " " 1486	1506
93	1913 May 31 " " 1485	1507
94	1913 May 31 " " 1486	1508
45	1913 May 31 " " 1485	1509
125	1913 May 31 " " 1486	1510
135	1913 May 31 " " 1485	1511
105	1913 May 31 " " 1486	1512

Dec 31 To Lumber 65	1913 Jan 31 S.D.B. Borden 1484	1486
76	1913 May 31 " " 1485	1487
710	1913 May 31 " " 1486	1488
216	1913 May 31 " " 1485	1489
212	1913 May 31 " " 1486	1490
216	1913 May 31 " " 1485	1491
1	1913 May 31 " " 1486	1492
39	1913 May 31 " " 1485	1493
46	1913 May 31 " " 1486	1494
120	1913 May 31 " " 1485	1495
81	1913 May 31 " " 1486	1496
145	1913 May 31 " " 1485	1497
81	1913 May 31 " " 1486	1498
21	1913 May 31 " " 1485	1499
124	1913 May 31 " " 1486	1500
115	1913 May 31 " " 1485	1501
81	1913 May 31 " " 1486	1502
146	1913 May 31 " " 1485	1503
145	1913 May 31 " " 1486	1504
119	1913 May 31 " " 1485	1505
32	1913 May 31 " " 1486	1506
62	1913 May 31 " " 1485	1507
68	1913 May 31 " " 1486	1508
93	1913 May 31 " " 1485	1509
94	1913 May 31 " " 1486	1510
45	1913 May 31 " " 1485	1511
125	1913 May 31 " " 1486	1512
135	1913 May 31 " " 1485	1513
105	1913 May 31 " " 1486	1514

Sheet No. _____

Name _____

Address _____

Office of Employment Service, Salt Lake City

1916

1916

Jan 31	Jan 31	Feb 29	Feb 29	Feb 29
43	43	43	43	43
35	35	35	35	35
145	145	145	145	145
21	21	21	21	21
32	32	32	32	32
33	33	33	33	33
87	87	87	87	87
146	146	146	146	146
113	113	113	113	113
31	31	31	31	31
93	93	93	93	93
115	115	115	115	115
123	123	123	123	123

- to Bureau of

1916

Jan 31	Jan 31	Feb 29	Feb 29	Feb 29
115	115	115	115	115
119	119	119	119	119
11	11	11	11	11

Sheet No. _____

Name _____

Address _____

Operating Map Expense Item Woodward

1916

July 31	July 31	July 31	July 31	July 31
69	69	69	69	69
95	95	95	95	95
123	123	123	123	123
132	132	132	132	132

Operating Map Expense Item Woodward

July 31	July 31	July 31	July 31	July 31
95	95	95	95	95
123	123	123	123	123
131	131	131	131	131
132	132	132	132	132

Name _____
Address _____

One Gourd for Fuchs Spinale
4273.

<small>TREASURY PUBLIC DEPARTMENT - BUREAU</small>						
^{1916.} July 31	Voucher	132	750	¹⁹¹⁶ July 31	B.C. Inc., Green Mountain, Ill 751	750

One Pulley Bored Out.

July 31, 1916, Voucher 128	July 31, 1916, E. S. B. Co. Int. 117.33	762
----------------------------	-----------------------------------------	-----

Sheet No.

Name _____
Address _____

One Apparatus for Scraping Powder Blank
H. 47.79

1916	July 31	Voucher	125	1916	July 31	Office Lin. & M. Ac.	11735	14559
------	---------	---------	-----	------	---------	----------------------	-------	-------

One Hundred blades
#14x90

July 31	Voucher 131	1951 July 31 PPS Inv. G. H. H. 11743	1295
---------	-------------	--------------------------------------	------

Sheet No. _____

Name _____

Address _____

One Standard Brand Soap
211-94

¹⁹¹⁶
July 31 Voucher 132 *11-37 July 31 M.C. Macdonald 11755* *11-37*

One Insurance Co. Bulletin Board

¹⁹¹⁶
July 31 Voucher 132 ¹⁹¹⁷
28 July 31 E. H. H. 11761 *28*

Sheet No. _____

Name _____

Address _____

One 8 1/2 x 11" Standard Frame
13311

¹⁹¹⁶
July 31 Voucher 132 *12 July 31 G. C. S. 11762* *12*

Sheet No. _____

Name _____
Address _____

Sheet No. 102

Name _____
Address _____

Outfit for Plating Trucks. \$2685

1911			1911		
Oct. 31 To Balance	114	1050	Oct. 31 By J.A.E. Inc. Inv		5250
" " " "	115	4800	Nov 30 " " " "	506	1925
Nov 30 " " " "	117	1350	Dec 30 " " " "	160	7125
" " " "	118	825			7000
" " " "	119	443			
" " " "	120	200			
" " " "	121	7175			
Dec 30 " " " "	122	7175			
		<u>7175</u>			

Dan O'Neill Loan

1912			1912		
June 31 To Balance	12	200	June 31 By Dan O'Neill		200

Overhaul Lumber Truck. \$3067

1912			1912		
Aug. 31 To Balance	67	165	Aug. 31 By T.D. Inc. Inv	636	2938
" " " "	68	75	Sept 30 " " " "	656	1200
" " " "	123	23			2918
" " " "	127	250			
Sept 30 " " " "	128	2175			
		<u>2175</u>			

Sheet No. 103

Name
AddressOne Each Pattern
#3113

1912	1912	1912	1912
Oct 31 To Inventory 149	7252	Oct 31 By L. O. Oth 144	7252

Albert Oliver L.M.

1912	1912	1912	1912
Oct 31 To Inventory 149	16	Oct 31 By L.M. 144	16

Geo. L. Oth L.M.

1912	1912	1912	1912
Nov 30 To Inventory 150	17	Nov 30 L.M. 144	17
Dec 31 To Inventory 150	7252	Dec 31 L.M. 144	7252

Sheet No. _____

Name
Address

J. P. Oth

1912	1912	1912	1912
July 31 To Inventory 75	75	July 31 By L.M. 144	75

One Each Pattern #3556

1912	1912	1912	1912
Nov 30 To Inventory 144	234	Nov 30 By L.S.B. 144	234

One Each Pattern #2467-77-78 #2557

1912	1912	1912	1912
Nov 30 To Inventory 156	3075	Nov 30 By L.S.B. 144	3075
Dec 31 " 156	255	Dec 31 " 144	255

Sheet No. _____

Name
AddressOne Rough & Tattered
#3557

1912

Nov 31 To Lumber 141 1430 Nov 30 By E.S.B. Co. Dr 827 1430

1913

Dec 31 Lumber 156 316 Dec 31 E.S.B. Co. Dr 831 316

1914

Jan 31 Lumber 157 132 Jan 31 E.S.B. Co. Dr 847 132

1914

Jan 31 Lumber 157 One Rough & Tattered #3594
132 Jan 31 E.S.B. Co. Dr 847 132

Sheet No. _____

Name
AddressOne Rough & Tattered
#3621

1912

Feb 28 Lumber 131 139 Feb 28 E.S.B. Co. Dr 822 139

1914

Feb 28 Lumber 132 262 Feb 28 E.S.B. Co. Dr 835 262

1914

Mar 31 Lumber 156 1473 Mar 31 By E.S.B. Co. Dr 841 1473

Sheet No. _____

Name _____
Address _____One Kunch & Lid for Currying & Standing Pole Terminal
#3728

1894		1901		1907		1914	
Sept 30	Lumber	221	160	Oct 30	Edmund B. Co. Ins	9307	8374
"	"	95	8412	"	"	"	"

1894		1901		1907		1914	
Sept 30	Lumber	91	11	Sept 30	Edmund B. Co. Ins	9308	27690
"	"	99	27645	Oct 31	"	9604	2313
Oct 31	"	12	188	"	"	"	"
"	"	11	2125	"	"	"	"

1894		1901		1907		1914	
Sept 30	Lumber	91	66	Sept 30	Edmund B. Co. Ins	9309	8755
"	"	90	8957	Oct 31	"	9600	17777
"	"	42	723	Nov 30	"	9477	6582
Oct 31	"	41	1856	Dec 31	"	9609	158
"	"	115	15700	"	"	"	"
"	"	110	37	"	"	"	"
Nov 30	"	108	58	"	"	"	"
"	"	109	6537	"	"	"	"
Dec 31	"	152	158	"	"	"	"

Sheet No. _____

Name _____
Address _____One Thermostat Complete
#3733

1894		1901		1907		1914	
Sept 30	Lumber	90	1897	Sept 30	Edmund B. Co. Ins	9311	1897
Oct 31	"	112	18	Oct 31	"	9468	18

1894		1901		1907		1914	
Sept 31	Lumber	115	04	Sept 31	Edmund B. Co. Ins	9418	04
Nov 30	"	21	1090	Nov 30	"	9502	6313
"	"	109	5223	"	"	"	"

1894		1901		1907		1914	
Oct 31	Lumber	110	10510	Oct 31	Edmund B. Co. Ins	9419	10510
Nov 30	"	109	9127	Nov 30	"	9503	9127

Sheet No. _____

Name
AddressOne Sixtyfour Landing Outside of Cove
1896

1901			1901			1901		
Oct 31	Lumber	115	2322	Oct 31	E. S. B. Co. Lumber	9500	2322	
Nov 30	"	119	96	Nov 30	"	9501	2322	
Dec 31	"	152	2415	Dec 31	"	9595	2415	

1901			One Sixtyfour Landing Outside of Cove			1901		
Oct 31	Lumber	115	278	Oct 31	E. S. B. Co. Lumber	9601	278	
Nov 30	"	108	278	Nov 30	"	9608	26501	
Dec 31	"	109	2676	Dec 31	"	9609	2072	
Dec 31	"	152	2072					

1901			1901			1901		
One Room & Tatforn ¹⁹⁰¹ 1901								
Oct 31	Lumber	115	110	Oct 31	E. S. B. Co. Lumber	9503	110	

Sheet No. _____

Name
AddressOne Sixtyfour Landing Outside of Cove
1896

1901			1901			1901		
Nov 30	Lumber	109	328	Nov 30	E. S. B. Co. Lumber	9518	328	

1901		One Hot Test Table		1901		1901	
Nov 30	Lumber	109	7043	Nov 30	E. S. B. Co. Lumber	9516	7043
July 28	"	116	90	July 28	"	9579	95

1901			One Rough & Tumbled 1896 1897				
Nov 30	Lumber	109	1850	Nov 30	E. S. B. Co. Lumber	9517	1850

Sheet No.

Name
Address

One Pattern 13916

[illegible]

Operating & Mfg. Expense Items

Dec 31	12	3721	21	1878	36921
	49	1000	Jan 31	"	1880
	96	758			76816
	117	2000			
	160	503			
	216	119			
	217	915			
1916	216	516			
Jan 31	21	1220			
	39	545			
	43	142			
	47	5435			
	53	1000			
	60	1010			
	66	1615			
	75	350			
	127	1210			
	145	1210			

Operating & Mfg Expense Stamps 840.13 Phenol Linc

Dec 31	Home	18	3322	Dec 31	St. Charles Dr	14760.	17254
		49	2630	Jan 31	"	10853.	21278
		96	638				
		200.	402				
		216	203				
		217	1254				
		226.	547				
		1	616				
		39	549				
		43	285				
		47	5230				
		51	118				
		51	12500				
		70	261				
		80	261				
		148	5842				

Name _____
Address _____

One Pattern as Per Above
#4184

1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030																																																																																																																																																																																																																																																																																																					
May 21	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	235

One Pattern 1842 4207

1774		1775		1776		1777		1778		1779		1780		1781		1782		1783		1784		1785		1786		1787		1788		1789		1790		1791		1792		1793		1794		1795		1796		1797		1798		1799		1800																																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

One-Clasp Guard # 14-21

[illegible]

Sheet No. _____

Name _____

Address _____

One Pattern

42154

June 30 Voucher 108 1120 June 30 1895 1127 1120

One Pattern 1897 # 4219
June 30 Voucher 108 1173 June 30 1898 1174 1173One Pattern # 4219
June 30 Voucher 108 1173 June 30 1898 1174 1173

Photographing 1- Parts for 50 Nickel Sub. 19 Parts per sketch #26
 Semblance of Electric Spark #170 2243 Parts per sketch #26
 Petroleum Sailing 2002 20 Plaster Moulds #26
 Petroleum Sailing 3 2277-Plaster J. L. M. 11
 for Battery Gang #2005 21 Engraving Machine #25
 Herman A. W. 2281 Photo Work & Navy Artillery #26
 Labor & Mail for 50 Portable Business #2552 Photo of R. R. Cell #26
 Sappa George Phonograph #2552 Photo (2) #26
 Labor & Mail for 50 Pattern as per 101 Photos S. A. E. #27
 Planning & Milling 4 Blue Prints #293 Pattern (1) #27
 aluminum City 2033 Polishing Machine #2326 Pattern (1) #27
 Photographs Work 5 Premium Phonos #2351 Plates (2) #27
 for Legal Dept. #2037 Photo Work #2353 Pattern "1798" #27
 Phonometer to 6 Pattern Per Apt. #2353 Photo Work #27
 Test Speaking #2038 Pattern #1910 & 1912 2363 Patterns #27
 Photographs Work #2038 Pattern #1910 & 1914 2366 Pattern #27
 for Mr. Dyer & Co 7 Pattern #1915 #2367 Punched & Dies #27
 Biography M. Edison #2042 Pattern #1915 & 1917 #2368 Photo #27
 Photographs Work #2042 Pattern #1915 & 1917 #2369 Patterns #27
 for Drapery Dept. 8 Pattern #1916 & 1917 #2370 Photo & Corns #27
 Edison Photo Work #2051 Part up & B. M. #2371 Photo #27
 Photographs Work 9 Pattern (5) #2372 Photo (6) #27
 my Cabinets #2081 Pattern #1934 #2373 Printing Machine #27
 Photographs 10 Pattern #1936 #2374 Photography #27
 Emulsion by Green #2084 Inverse J. M. & M. 105 Photography #27
 Air Changes for 11 Photo Work #2375 Photo of Map #27
 Kelly & Sons #2089 Pattern 14 & 6 #2379 Photo of E. J. Bayne #27
 Blush up Car wheels #2090 Pattern #614 #2383 Primary Batteries #27
 Turn down Bearings 12 Plate (5) #2384 Photo (1) #27
 for Electric Car #2118 Pattern (10) #2385 Photo (at least) #27
 Photographs Work 13 Part (3) #2386 Photo & Prints #27
 Henri & Morrey #2147 Patterns per sheet #2387 Photo Work #27
 Pattern 1820 B- 14 Pattern (3) #2388 Photo & Blending #27
 by J. Oth. #2148 Pattern (1) #2389 Patterns (2) #27
 Drawing up Machine 15 Pattern (6) #2390 Pattern #27
 for Spark Cells #2151 Planning Lever #2391 Polishing A. R. G. L. #27
 Primary Batteries #2152 Pattern (1) #2392 Pattern 2326 #27
 Drink of Munk Photo #2153 Pattern (5) #2393 Patterns #27
 Johns Emulsion #2200 Pattern (10) #2394 Patterns #27
 Photo Work & new #2154 Pattern (1) #2395 Photo Work #27
 Horse Sales Wagon #2199 Patterns (4) #2396 Photo "Belgi" #27
 Antik U. N. #2155 Pattern #1332 #2397 Ring (50) #27
 L. M. for 100 Engraving Machine #2398 Pattern Work #27
 Phillips C. #2156 Engraving Machine #2399 Pattern up Patterns #27
 R. M. for 100 Pattern #1977 #2400 Pattern as per sketch #27
 Parts for 20 Dice #2203 Part & Machine #2401 Pattern #27
 Photo R. M. 17 Photo & Frames #2402 Pattern #27
 Photo Work by 18 Producer Eng. #2403 Patterns #27
 Thompson #2204 Plates (2) #2404 Photo & Dies #27
 Copper Chart 100 Engraving Machine #2405 Photo & Dies #27
 L. M. #2205 Pencil & Die #2406 Pattern for Die #27

Sheet No.

Name _____

Address

Photographic Work Green & Powers.
12149

f2149

[illegible]

Sheet No.

Name _____

Address

Photograph's Book

42149

1113									
June 30	Brought Forward	11.	6,447.97	June 30	Brought Forward	11.	8,801.40		
	To December	11.	3.00		By the Oldman	11.	1,818.84		
	"	11.	7.50		"	11.	6,436.77		
	"	11.	11.00		"	11.	2,147.66		
	"	11.	30.00		"	11.	9,604.33		
	"	11.	25.00		"	11.	1,888.88		
	"	11.	1.31		"	11.	1,976.66		
July 31	"	11.	2.07		"	11.	2,800.89		
	"	11.	6.00						
	"	11.	3.94						
	"	11.	3.41						
	"	11.	10.90						
	"	11.	2.95						
	"	11.	94.00						
	"	11.	137.44						
	"	11.	6.00						
	"	11.	129.85						
Aug 30	"	11.	6.00						
	"	11.	70.00						
	"	11.	22.15						
	"	11.	1.81						
	"	11.	19.00						
	"	11.	48.75						
	"	11.	7.90						
	"	11.	1.06						
	"	11.	1.11						
Sept 30	"	11.	1.16						
	"	11.	2.9						
	"	11.	3.0						
	"	11.	3.0						
	"	11.	11.01						
	"	11.	3.0						
	"	11.	116.00						
	"	11.	7.14						
Oct 31	"	11.	1.09						
	"	11.	1.8						
	"	11.	3.6						
	"	11.	2.9						
	"	11.	7.9						
	"	11.	1.5						
Nov 30	"	11.	1.24						
	"	11.	1.6						
	"	11.	4.7						
	"	11.	7.0						
	"	11.	1.63						
Dec 31	"	11.	1.16						
	"	11.	2.8						
	"	11.	11.4						
	"	11.	1.5						
	"	11.	1.6						
	"	11.	5.53						
	"	11.	6.7						
	"	11.	10.1						
	"	11.	1.88						
	"	11.	1.26						
			11.11						

Sheet No. _____

Name
Address

Photographic Work

#3077

Sheet No. 22

Name
Address

Portable Business Phonograph #2252

1912			1913			1913		
Jan 31	Berry & Raymond	113975	Jan 31	Berry & Raymond	6239	5309	113975	
Feb 28	"	5309	Feb 28	"	7661	7449	5309	
Mar 31	"	121	Mar 31	Berry & Raymond	7661	7449	121	
		127516					127516	
1913			1913					
Mar 31	To Lumber	120	Mar 31	By E. B. In. In.	7705	8528		
Apr 30	"	140	Apr 30	"	7238	8731		
May 31	"	148	May 31	"	7467	8840		
June 30	"	80	June 30	"	7750	8761		
July 31	"	120	July 31	"	7740	8658		
		88	Aug 31	"	7507	8766		
		129	Sept 30	"	7772	8182		
Aug 30	"	116	Oct 31	"	8097	8803		
Sept 30	"	109	Nov 30	"	8207	7663		
Oct 31	"	127	Dec 31	"	8205	7665		
Nov 30	"	151	Jan 31	"	8466	7667		
Dec 31	"	156	Feb 28	"	8581	7363		
1914	"	156	Mar 31	"	8662	7329		
Jan 31	"	127	Apr 30	"	8800	8691		
Feb 28	"	76	May 31	"	8846	8673		
Mar 31	"	134	June 30	"	8956	8757		
Apr 30	"	66	July 31	"	9056	8733		
May 31	"	106	Aug 31	"	9194	8811		
June 30	"	74	Sept 30	"	9297	8783		
July 31	"	116	Oct 31	"	9460	8867		
Aug 30	"	115	Nov 30	"	9491	8867		
Sept 30	"	106	Dec 31	"	9590	8867		
Oct 31	"	89	Jan 31	"	9665	8867		
Nov 30	"	186	Feb 28	"	9707	8867		
Dec 31	"	56	Mar 31	"	9753	8867		
1915	"	90	Apr 30	"	9807	8867		
Jan 31	"	95	May 31	"	9901	8867		
Feb 28	"	115	June 30	"	10047	8867		
Mar 31	"	109	July 31	"	10195	8867		
Apr 30	"	152	Aug 31	"	10347	8867		
May 31	"	138	Sept 30	"	10495	8867		
June 30	"	147	Oct 31	"	10647	8867		
July 31	"	147	Nov 30	"	10795	8867		
Aug 30	"	171	Dec 31	"	10947	8867		
Sept 30	"	784	Jan 31	"	11095	8867		
Oct 31	"	193	Feb 28	"	11247	8867		
Nov 30	"	120	Mar 31	"	11395	8867		
Dec 31	"	251	Apr 30	"	11547	8867		
1916	"	256	May 31	"	11695	8867		
Jan 31	"	271	June 30	"	11847	8867		
Feb 28	"	200	July 31	"	11995	8867		
Mar 31	"	171	Aug 31	"	12147	8867		
Apr 30	"	226	Sept 30	"	12295	8867		
May 31	"	148	Oct 31	"	12447	8867		
June 30	"	126	Nov 30	"	12595	8867		
July 31	"	119	Dec 31	"	12747	8867		
Aug 30	"	81	Jan 31	"	12895	8867		
Sept 30	"	135	Feb 28	"	13047	8867		

P 179

1911		1911		1911		1911	
Feb 28	To Voucher	102	2500	Feb 28	By E. B. Thompson	3489	7500
May 31	"	103	5000	May 31	"	J. A. E. Ing	4084
"	"	115	3000	June 30	"	"	4367
"	"	116	1500	June 30	"	"	4500
June 30	"	117	1600	May 31	"	"	5701
"	"	119	8200	June 29	"	"	7068
Sept 30	"	142	8438	July 31	"	"	8400
May 31	"	140	7068	Aug 31	"	"	6190
June 29	"	109	145	Sept 30	"	"	6336
"	"	145	8252	Oct 31	"	"	6481
July 31	"	142	5158	Nov 30	"	"	6619
Aug 31	"	69	44	Dec 31	"	"	6703
Sept 30	"	129	15214				7102
Oct 31	"	121	13453				
Nov 30	"	90	100				
Dec 31	"	106	50				
	"	149	12502				
Nov 30	"	70	200				
"	"	112	20				
"	"	121	2655				
Dec 31	"	28	70				
	"	14	103				
	"	103	1000				
	"	152	251				
	"	155	5941				
			91632				
			91632				
Mar 31	To Lumber	119	05	Mar 31	By J. A. E. Ing	7441	977
"	"	115	969	Apr 30	"	"	7068
Apr 30	"	140	3103	May 31	"	"	7068
May 31	"	52	11	June 30	"	"	7997
Sept 30	"	30	11				18

Sheet No. _____

Name
Address

Sheet No. 37

Name
Address

Photographic Work # 2906

1912				1913					
Mar 30	24 Omaha	70	236	Mar 30	24 E. Omaha	5501	6248		
"	"	127	5918	Apr 30	"	"	5732		
Apr 30	"	75	1860	May 31	"	"	5712		
"	"	108	100	July 31	"	"	6667		
"	"	142	6063	July 31	"	"	6217		
May 31	"	46	2503	Aug 31	"	"	6364		
"	"	47	76	Apr 30	"	"	6501		
"	"	50	1118	Oct 31	"	"	6607		
"	"	122	140	Nov 30	"	"	6750		
"	"	140	3463	Dec 31	"	"	6863		
June 29	"	141	1711	Jan 31	"	"	6954		
July 31	"	97	2616	Feb 28	"	"	7111		
"	"	134	700						
"	"	142	14825						
Aug 31	"	5	3187						
"	"	127	11414						
Sept 30	"	61	12357						
Oct 31	"	97	500						
"	"	129	14085						
Nov 30	"	30	204						
"	"	83	410						
"	"	124	23504						
Dec 30	"	108	935						
"	"	151	10800						
1913	"	155	38615						
Jan 31	"	86	250						
"	"	98	860						
"	"	104	182						
"	"	152	1145						
"	"	155	31619						
Feb 28	"	97	410						
"	"	122	1863						
"	"	122	18164						
			191072						
Mar 31	24 Omaha	85	110	Mar 31	24 E. Omaha	759	18603		
"	"	117	256	Apr 30	"	"	9324		
"	"	120	178	May 31	"	"	9506		
Apr 30	"	11	298	June 30	"	"	9604		
"	"	140	21118	July 31	"	"	7785		
"	"	52	220	Aug 31	"	"	7998		
May 31	"	96	308	Oct 30	"	"	8012		
"	"	138	150	Oct 31	"	"	8125		
"	"	142	18320						
June 30	"	80	489						
"	"	123	243						
"	"	129	17249						
July 31	"	116	17124						
July 30	"	74	9713						
Sept 30	"	109	399						
"	"	85	16414						
Oct 31	"	122	1150						
"	"		21164						

Sheet No. _____

Name
Address

Sheet No. _____

Name
Address

Phenol Recovery Plant

110

1915		1916		1917		1918		1919	
<i>Apr 30</i>	<i>Vanish</i>	<i>773</i>	<i>3220</i>	<i>Apr 30</i>	<i>Libby</i>	<i>Imp</i>	<i>Post</i>	<i>3220</i>	<i>3157</i>
<i>June 30</i>		<i>751</i>	<i>3157</i>	<i>June 30</i>	<i>"</i>	<i>"</i>	<i>Post</i>	<i>3157</i>	<i>3157</i>

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Sara Anne O'Connell, Operator.

11135

1916		1917	
Mar 31	Conch	16	32
		117	117
Apr 30		68	117
		50	117
		91	117
		94	117
May 31		26	117
		74	117
		82	117
		104	117
		121	117
		125	117
June 30		8	117
		41	117
		46	117
		55	117
		76	117
		78	117
July 31		102	117
		123	117
		131	117
		137	117

NY

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____

Phenol Plant P.A. Edison

1891
May 31 *Teacher* *S.B.* *1180.00* *May 31* *2nd 1182.50* *480.00*

Sheet No. _____

Name _____

Address _____

Sheet No. 50

Name _____

Address _____

A. Pierrman. Labor & mat'l for

1908		1908		1908	
Sept. 30. To Voucher	43	1908	Sept. 30. By L.M. Swine	483	1133
Feb. 27. " "	45	1908	Feb. 27. " " "	867	535
1908	70	1908	Feb. 31. " Voucher	96	171
Oct. 31. " Invoice	285	1908	Mar. 30. " L.M. Swine	291	171
Nov. 30. " Voucher	32	1908	Mar. 30. " " "	569	156
1908	104	1908	Mar. 29. " " "	569	156
Feb. 28. " "	140	1908	Mar. 30. " " "	569	156
Mar. 30. " "	127	1908	July 31. " " "	658	156
July 31. " "	134	1908	July 30. " " "	658	156
Sept. 30. " "	119	1908	Oct. 31. " " "	666	1798
Oct. 31. " "	11	1908			
1908	122	1908			1293
Nov. 30. " Voucher	15	1908	Nov. 30. By L.M. Swine	5295	136
Feb. 28. " "	102	1908	Feb. 29. " "	8613	75

George Poppa Labor & mat'l for

1908		1908		
Sept 30 To Voucher	96	12	Sept 30 By L.M. Invoice 483	12

Sheet No. 51

Name
AddressPink and Mount Photo Jobbing Convention
2200

1910	July 31 To Voucher	82	40	1910	July 31 By G. L. M. Inc. 2200	40
1913	Mar 31 To Lumber	120		1913	Mar 31 By G. L. M. Inc. 7224	3401
	Apr 30 " "	110		1913	Apr 30 " " " "	143

Pastern Markovitch Ltd. Inc. #3250

1913	Mar 31 To Lumber	120	3401	1913	Mar 31 By G. L. M. Inc. 7224	3401
	Apr 30 " "	110		1913	Apr 30 " " " "	143

Photographic Work of Photograph Sales Wagon # 2199

1910	July 31 To Voucher	89	500	1910	July 31 By G. L. M. Inc. 2199	625
	" " " "	91	125	1910	Aug " " " "	136.50
	Aug 31 " "	47	90			19.95
	" " " "	91	25			
	" " " "	97	1000			
	" " " "	97	1990			

Ben Rollins #3292

1913	Mar 31 To Lumber	120	525	1913	Mar 31 By G. L. M. Inc. 7216	525
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Sheet No. 52

Name
Address

Fallon Markovitch Ltd. Inc. #3311

1913	Mar 31 To Lumber	120	1913	Mar 31 By G. L. M. Inc. 7203	1913	Mar 31 By G. L. M. Inc. 7203
	Apr 30 " "	110		Apr 30 " " " "		Apr 30 " " " "
	July 31 " "	120		July 31 " " " "		July 31 " " " "

Produce Store Telephone Studio Equipment #3310

1913	Apr 30 To Lumber	102	89	Apr 30 By G. L. M. Inc. 7400	13943
	" " " "	125	210	May 31 " " " "	101273
	" " " "	140	136.40	June 30 " " " "	130504
	May 31 " "	19	50		
	" " " "	39	1161		
	" " " "	39	2450		
	" " " "	51	37.50		
	" " " "	62	235		
	" " " "	66	2016		
	" " " "	67	21		
	" " " "	88	1474		
	" " " "	96	355		
	" " " "	118	208		
	" " " "	123	504		
	" " " "	125	1156		
	" " " "	137	1150		
	" " " "	138	233		
	" " " "	142	17244		
	June 30 " "	17	1575		
	" " " "	23	629		
	" " " "	30	121		
	" " " "	40	179		
	" " " "	46	34		
	" " " "	45	2344		
	" " " "	61	163		
	" " " "	62	162		
	" " " "	63	158		
	" " " "	64	158		
	" " " "	65	158		
	" " " "	66	158		
	" " " "	67	158		
	" " " "	68	158		
	" " " "	69	158		
	" " " "	70	158		
	" " " "	71	158		
	" " " "	72	158		
	" " " "	73	158		
	" " " "	74	158		
	" " " "	75	158		
	" " " "	76	158		
	" " " "	77	158		
	" " " "	78	158		
	" " " "	79	158		
	" " " "	80	158		
	" " " "	81	158		
	" " " "	82	158		
	" " " "	83	158		
	" " " "	84	158		
	" " " "	85	158		
	" " " "	86	158		
	" " " "	87	158		
	" " " "	88	158		
	" " " "	89	158		
	" " " "	90	158		
	" " " "	91	158		
	" " " "	92	158		
	" " " "	93	158		
	" " " "	94	158		
	" " " "	95	158		
	" " " "	96	158		
	" " " "	97	158		
	" " " "	98	158		
	" " " "	99	158		
	" " " "	100	158		

Sheet No. _____

Name _____

Address _____

Pattern Work on Hand Lumber Extracting #3312

1875

Apr 30 To Lumber 140. 33.58

1875

Apr 30 By E.S.B. In. 7357 33.58

43

0

1876

Apr 30 To Lumber 140. 126

1876

Apr 30 By E.S.B. In. 7358 126

Pattern Work on Sawing Blocks #3315

Sheet No. _____

Name _____

Address _____

Pattern Work on Automatic Lumber Ringing Machine #3325

1875

Apr 30 To Lumber 140. 91.08

May 31 a 148. 51.87

June 30 a 123. 11.13

July 31 a 179. 21.13

Aug 30 a 116. 15.34

1875

Apr 30 By E.S.B. In. 7359 91.08

May 31 a 747. 51.87

June 30 a 760. 11.13

July 31 a 776. 21.13

Aug 30 a 787. 15.34

Pattern Work on Sawing Blocks #3316

1875 Apr 30 To Lumber 140. 38.0

1875 Apr 30 By E.S.B. In. 7362 38.0

1875

1875

Name _____
Address _____

J. H. Powers Lym

1926		1927		1928		1929	
July 28	Thunder	64	130	July 28	L.V.M. Snow	skin	68.5
"	"	103	61	"	"	part	65
"	"	115	25	Max 31	"	87.5	300
"	"	134	1193	Apr 30	"	80 1/2	920
"	"	136	300				
Apr 30	"	39	900				
			1400				

1911 Pattern Work for Chinking Head 1912 13637

Mar. 31.	Uncher	106.	8743	Mar. 31	Sp8 LB Co Inw	8674.	8743.
Apr 30.	"	116.	1076	Apr 30.	"	8813	1076

Sheet No. _____

Name
Address

Personal Experimental Work

[illegible]

Sheet No. _____

Name
AddressBallantyne, Binding Harpist
1900

1900	May 31, Lumber 1900	1900	May 31, Lumber 1900	1900
------	---------------------	------	---------------------	------

Sheet No. _____

Name
AddressBallantyne, 2905-2979
1900

1900	May 31, Lumber 1900	1900	May 31, Lumber 1900	1900
------	---------------------	------	---------------------	------

Ballantyne, Lumber Merchant
1900

1900	May 31, Lumber 1900	1900	May 31, Lumber 1900	1900
------	---------------------	------	---------------------	------

Ballantyne, 2905-2979
1900

1900	May 31, Lumber 1900	1900	May 31, Lumber 1900	1900
------	---------------------	------	---------------------	------

61

Sheet No. _____

Name _____
Address _____

altoneo ex fus. Alchik
#5977

Aug. 31	December 22	177	Aug. 31 Edward Pennocks 10313	177
---------	-------------	-----	-------------------------------	-----

Faddie Spoke #3078

1945		1946		1947	
July 30	Summer - 127	126	Jan 30	116	1260
Jan 31	" 37	128	Jan 31	" 1052	1450
July 27	Summer - 1013	791	Jan 27	Summer - 30	771

Sheet No..

Name _____
Address _____

Pattern as per Sketch #B62
#3082

Sept. 30. Tucker	700.	178	Sept. 30. Edwards Thomas W. D. M. 1861	178
------------------	------	-----	----------------------------------------	-----

Patterns for Cabinet Fixtures

1915		1916		1917	
Sept. 30	22.57	Sept. 30	22.57	Sept. 30	22.57
Oct. 31	67.08	Oct. 31	67.08	Oct. 31	67.08

Sheet No. _____

Name _____

Address _____

Patterson #3999

[illegible]

Public Library

[illegible]

Sheet No. _____

Name
Address

Paddy's Complete

1862	Dec 30	London	66	1462	Dec 30	London	1005	1462
1863	Dec 31	"	111	1463	Dec 31	"	1005	1463
1864	"	"	116	1464	Jan 31	"	1005	1464
1865	"	"	117	1465	"	"	1005	1465
1866	"	"	118	1466	"	"	1005	1466
1867	"	"	119	1467	"	"	1005	1467
1868	"	"	120	1468	"	"	1005	1468
1869	"	"	121	1469	"	"	1005	1469
1870	"	"	122	1470	"	"	1005	1470
1871	"	"	123	1471	"	"	1005	1471
1872	"	"	124	1472	"	"	1005	1472
1873	"	"	125	1473	"	"	1005	1473
1874	"	"	126	1474	"	"	1005	1474
1875	"	"	127	1475	"	"	1005	1475
1876	"	"	128	1476	"	"	1005	1476
1877	"	"	129	1477	"	"	1005	1477
1878	"	"	130	1478	"	"	1005	1478
1879	"	"	131	1479	"	"	1005	1479
1880	"	"	132	1480	"	"	1005	1480
1881	"	"	133	1481	"	"	1005	1481
1882	"	"	134	1482	"	"	1005	1482
1883	"	"	135	1483	"	"	1005	1483
1884	"	"	136	1484	"	"	1005	1484
1885	"	"	137	1485	"	"	1005	1485
1886	"	"	138	1486	"	"	1005	1486
1887	"	"	139	1487	"	"	1005	1487
1888	"	"	140	1488	"	"	1005	1488
1889	"	"	141	1489	"	"	1005	1489
1890	"	"	142	1490	"	"	1005	1490
1891	"	"	143	1491	"	"	1005	1491
1892	"	"	144	1492	"	"	1005	1492
1893	"	"	145	1493	"	"	1005	1493
1894	"	"	146	1494	"	"	1005	1494
1895	"	"	147	1495	"	"	1005	1495
1896	"	"	148	1496	"	"	1005	1496
1897	"	"	149	1497	"	"	1005	1497
1898	"	"	150	1498	"	"	1005	1498
1899	"	"	151	1499	"	"	1005	1499
1900	"	"	152	1500	"	"	1005	1500
1901	"	"	153	1501	"	"	1005	1501
1902	"	"	154	1502	"	"	1005	1502
1903	"	"	155	1503	"	"	1005	1503
1904	"	"	156	1504	"	"	1005	1504
1905	"	"	157	1505	"	"	1005	1505
1906	"	"	158	1506	"	"	1005	1506
1907	"	"	159	1507	"	"	1005	1507
1908	"	"	160	1508	"	"	1005	1508
1909	"	"	161	1509	"	"	1005	1509
1910	"	"	162	1510	"	"	1005	1510
1911	"	"	163	1511	"	"	1005	1511
1912	"	"	164	1512	"	"	1005	1

Sheet No. _____

Name
Address

Charles W. Adams (1801)

[illegible]

Pattern for Continuous Ledger

Dec 21	Dec 21	Dec 21	Dec 21
1875	1875	1875	1875
1876	1876	1876	1876
1877	1877	1877	1877
1878	1878	1878	1878
1879	1879	1879	1879
1880	1880	1880	1880
1881	1881	1881	1881
1882	1882	1882	1882
1883	1883	1883	1883
1884	1884	1884	1884
1885	1885	1885	1885
1886	1886	1886	1886
1887	1887	1887	1887
1888	1888	1888	1888
1889	1889	1889	1889
1890	1890	1890	1890
1891	1891	1891	1891
1892	1892	1892	1892
1893	1893	1893	1893
1894	1894	1894	1894
1895	1895	1895	1895
1896	1896	1896	1896
1897	1897	1897	1897
1898	1898	1898	1898
1899	1899	1899	1899
1900	1900	1900	1900
1901	1901	1901	1901
1902	1902	1902	1902
1903	1903	1903	1903
1904	1904	1904	1904
1905	1905	1905	1905
1906	1906	1906	1906
1907	1907	1907	1907
1908	1908	1908	1908
1909	1909	1909	1909
1910	1910	1910	1910
1911	1911	1911	1911
1912	1912	1912	1912
1913	1913	1913	1913
1914	1914	1914	1914
1915	1915	1915	1915
1916	1916	1916	1916
1917	1917	1917	1917
1918	1918	1918	1918
1919	1919	1919	1919
1920	1920	1920	1920
1921	1921	1921	1921
1922	1922	1922	1922
1923	1923	1923	1923
1924	1924	1924	1924
1925	1925	1925	1925
1926	1926	1926	1926
1927	1927	1927	1927
1928	1928	1928	1928
1929	1929	1929	1929
1930	1930	1930	1930
1931	1931	1931	1931
1932	1932	1932	1932
1933	1933	1933	1933
1934	1934	1934	1934
1935	1935	1935	1935
1936	1936	1936	1936
1937	1937	1937	1937
1938	1938	1938	1938
1939	1939	1939	1939
1940	1940	1940	1940
1941	1941	1941	1941
1942	1942	1942	1942
1943	1943	1943	1943
1944	1944	1944	1944
1945	1945	1945	1945
1946	1946	1946	1946
1947	1947	1947	1947
1948	1948	1948	1948
1949	1949	1949	1949
1950	1950	1950	1950
1951	1951	1951	1951
1952	1952	1952	1952
1953	1953	1953	1953
1954	1954	1954	1954
1955	1955	1955	1955
1956	1956	1956	1956
1957	1957	1957	1957
1958	1958	1958	1958
1959	1959	1959	1959
1960	1960	1960	196

Sheet No.

Name
Address

Patterns for Pipe Laiting

[illegible]

Patience

1916		1917		1918		1919		1920		1921		1922		1923		1924		1925		1926		1927		1928		1929		1930		1931		1932		1933		1934		1935		1936		1937		1938		1939		1940		1941		1942		1943		1944		1945		1946		1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968		1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197																																																																																																																																																																													

Address

Callan 1988
1981

Dec 31	Transfer	1176	157	Dec 31	E.S. B'n. Inc.	10703	1177
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Fathers for 2nd World

Dec 31	Amber	226	326	Dec 31	W. Edsall	109/18	326
--------	-------	-----	-----	--------	-----------	--------	-----

Address

Callinectes Line Wood Scale

1917		1917		1917			
Apr 31	House Rent	2.06	5.51	Apr 31	C. & H. H. Co. 10.78	5.51	
May 31	"	1.08	7.06	May 31	"	10.78	7.06

Production Efficiency Report

[illegible]

Sheet No. 101

Name
Address

Pattern as per Blue Prints # 2293

FOR THIS TABLE TO BE USED IN CONNECTION WITH

1911		1911	
Mar 31 To Voucher	116	805 Mar 31 By Estab. Inv 3627	7758
" " " "	117	4635	
" " " "	118	2315	
		7758	7758

Pattern # 1900 per Rpt # 2345

1911		1911	
apl 30 To Voucher	113	150 apl 30 By Estab. Inv 3822	518
" " " "	114	300	
" " " "	115	65	
		518	518

Pattern # 1910 & 1912 # 2363

1911		1911	
apl 30 To Voucher	113	300 apl 30 By Estab. Inv 3827	1116
" " " "	114	600	
" " " "	115	216	
		1116	1116

Sheet No. 104

Name
Address

Pattern # 1927-1928-1929 1930 & 1931

2352

FOR THIS TABLE TO BE USED IN CONNECTION WITH

1911		1911	
apl 30 To Voucher	113	264 apl 30 By Estab. Inv 3851	587
" " " "	114	507	
" " " "	115	96	
		587	587

Pattern # 1934 # 2392

1911		1911	
apl 30 To Voucher	113	113 apl 30 By Estab. Inv 3851	584
" " " "	114	22 May 31 " " " 4125	76
" " " "	115	46	
May 31 " " "	115	385	
" " " "	116	33	
		584	584

Pattern # 1936 # 2394

1911		1911	
apl 30 To Voucher	113	172 apl 30 By Estab. Inv 3851	552
" " " "	114	344	
" " " "	115	37	
		552	552

Sheet No. 105

Name
Address

J. H. Powers L + M

1911	May 31 To Voucher	89	500	May 31 By L + M Inv	4158	500
	June 30 " "	51	150	June 30 " "	4329	150
	July 31 " "	3	150	July 31 " "	4628	500
	July 31 " "	76	250	Aug 31 " "	4628	250
	July 31 " "	104	998	Aug 31 " "	6268	998
1912	Oct 31 To Cash	249	350	Oct 31 By L + M Inv	8169	350
	Nov 30 " "	46	1132	Nov 30 " "	8291	1357
	" " " "	56	720	Dec 31 " "	8217	959
	Dec 31 " "	161	188	Dec 31 " "	8529	2760
	" " " "	60	458			7699
1911	" " " "	156	121			
Jan 31	" " " "	45	160			
	" " " "	57	2300			
	" " " "	121	7668			

Pattern # 144 G

2399

1911	May 31 To Voucher	115	862	May 31 By E. C. & Sons	4120	1423
	June 30 " "	116	422			
	July 31 " "	117	128			
	" " " "		125			

Pattern # 614

2403

1911	May 31 To Voucher	117	42	May 31 By E. C. & Sons	4120	42
	June 30 " "	117	75	June 30 " "	4219	117
	" " " "	117	38			
	" " " "		125			

Sheet No. 121

Name
Address

Robt Removable Lucca on Teller # 3116

1912	Oct 31 To Cash	46	1916	Oct 31 By E. C. & Sons	4628	46
------	----------------	----	------	------------------------	------	----

Pattern as per Sketch # 3126

1912	Oct 31 To Cash	46	1916	Oct 31 By E. C. & Sons	4628	46
------	----------------	----	------	------------------------	------	----

Patterns

3126

1912	Nov 30 To Cash	122	1916	Nov 30 By E. C. & Sons	4628	122
------	----------------	-----	------	------------------------	------	-----

Sheet No. _____

Name _____

Address _____

Pattern

3113

1910 Nov 30 Dec 31	To Voucher "	124 150	1106 2110 4716	1910 Nov 30 Dec 31	By Editha Linn " " "	6736 6897	1106 2110 2616
--------------------------	-----------------	------------	----------------------	--------------------------	-------------------------	--------------	----------------------

Pattern

3114

1910 Nov 30 Dec 31	To Voucher "	124 150	2532 2532	1910 Nov 30 Dec 31	By Editha Linn " " "	6736 6897	2532 2532
--------------------------	-----------------	------------	--------------	--------------------------	-------------------------	--------------	--------------

Punch Pass

3115

1910 Nov 30 Dec 31	To Voucher "	124 150	960 2254 1152	1910 Nov 30 Dec 31	By Editha Linn " " "	6736 6897	960 2254 1152
--------------------------	-----------------	------------	---------------------	--------------------------	-------------------------	--------------	---------------------

Sheet No. _____

Name _____

Address _____

Cross Tie Roller

3116

1910 Nov 30 Dec 31	To Voucher "	124 150	1267 2222 1115	1910 Nov 30 Dec 31	By Editha Linn " " "	6736 6897	1267 2222 1115
--------------------------	-----------------	------------	----------------------	--------------------------	-------------------------	--------------	----------------------

Pattern for Laylindeor Head

3117

1910 Nov 30 Dec 31	To Voucher "	88 124	2222 2222 8742	1910 Nov 30 Dec 31	By Editha Linn " " "	6736 6897	2222 2222 8742
--------------------------	-----------------	-----------	----------------------	--------------------------	-------------------------	--------------	----------------------

Pattern

3118

1910 Nov 30 Dec 31	To Voucher "	124 150	2222 2222 2222	1910 Nov 30 Dec 31	By Editha Linn " " "	6736 6897	2222 2222 2222
--------------------------	-----------------	------------	----------------------	--------------------------	-------------------------	--------------	----------------------

Pattern

#3141

1910	Nov	30	To Lumber	124	500	1910	Nov	30	By B. H. H. Dr	469	520
------	-----	----	-----------	-----	-----	------	-----	----	----------------	-----	-----

Pattern

#3150

1910	Nov	30	To Lumber	124	900	1910	Nov	30	By B. H. H. Dr	601	920
------	-----	----	-----------	-----	-----	------	-----	----	----------------	-----	-----

Photo from Negatives

#3142

1910	Dec	31	To Lumber	150	2100	1910	Dec	31	By B. H. H. Dr	263	5925
	"	"	"	150	201						
1910	Jan	31	"	150	2348						
	"	"	"	150	2300						
	"	"	"	150	2101						
	"	"	"	100	2100						
					5925						

Pattern for Shaving Machine Motor #3145

1910	Dec	31	To Lumber	150	2348	1910	Dec	31	By B. H. H. Dr	601	3020
------	-----	----	-----------	-----	------	------	-----	----	----------------	-----	------

Punk Pattern Marks in Glass #3146

1910	Dec	31	To Lumber	150	2348	1910	Dec	31	By B. H. H. Dr	601	3020
------	-----	----	-----------	-----	------	------	-----	----	----------------	-----	------

No Lines

#3151

1910	Dec	31	To Lumber	150	2348	1910	Dec	31	By B. H. H. Dr	601	3020
------	-----	----	-----------	-----	------	------	-----	----	----------------	-----	------

Sheet No. _____

Name _____

Address _____

Patterns for East Shore Rail #3186

1815	Jan 31	To Lumber	155	2615	Dec 31	Editha Woodson	6200	2615
------	--------	-----------	-----	------	--------	----------------	------	------

Patterns #3176

1815	Jan 31	To Lumber	155	2615	Dec 31	Editha Woodson	6200	2615
------	--------	-----------	-----	------	--------	----------------	------	------

Patterns for Universal Shaving Machine Motor #3211

1815	Jan 31	To Lumber	155	2615	Dec 31	Editha Woodson	6200	2615
1815	Jan 31	"	155	2615	Jan 31	"	6200	2615

Sheet No. _____

Name _____

Address _____

Patterns #3703

1815	Jan 31	To Lumber	155	2615	Dec 31	Editha Woodson	6200	2615
1815	Jan 31	"	155	2615	Jan 31	"	6200	2615

Patterns #3211

1815	Jan 31	To Lumber	155	2615	Dec 31	Editha Woodson	6200	2615
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Patterns #3211

1815	Jan 31	To Lumber	155	2615	Dec 31	Editha Woodson	6200	2615
------	--------	-----------	-----	------	--------	----------------	------	------

Sheet No. _____

Name
Address

Kating Caravel

3214

1913	1913	1913	1913	1913	1913
Jan 31 To Lumber	155	3695 Jan 31 Lumber	6901	3695	
July 28 " "	124	July 28 By E.S.B. Co. Lumber	7072	572	
Mar 31 To Lumber	120	217 Mar 31 By E.S.B. Co. Lumber	7210	217	
Apr 30 " "	110	898 Apr 30 " " " "	7341	898	
Aug 30 " "	116	679 Aug 31 " " " "	7561	679	

Cutting Ethal Stk. on each side of 18 Rutter Inn #3225

1913	1913	1913	1913	1913	1913
Jan 31 To Lumber	100	723 Jan 31 Lumber	6905	723	

Pattern

3225

1913	1913	1913	1913	1913	1913
Jan 31 To Lumber	100	723 Jan 31 Lumber	6905	723	

Sheet No. _____

Name
Address

Pattern Work as Required on Patterns

3215

1913	1913	1913	1913	1913	1913
Jan 31 To Lumber	155	10 Jan 31 Lumber	6907	10	
July 28 " "	124	July 28 By E.S.B. Co. Lumber	7077	632	
Mar 31 To Lumber	120	210 Mar 31 By E.S.B. Co. Lumber	7210	210	
Apr 30 " "	120	158 Apr 30 " " " "	7341	158	

Turning up Boyd #3240

1913	1913	1913	1913	1913	1913
July 28 To Lumber	39	157 July 28 By E.S.B. Co. Lumber	7078	152 34	
" " " "	124	152 34		152 34	
Mar 31 To Lumber	120	132 58 Mar 31 By E.S.B. Co. Lumber	7217	132 58	

Pigeon Hole Cabinet #3232

1913	1913	1913	1913	1913	1913
July 28 To Lumber	124	246 July 28 By E.S.B. Co. Lumber	7082	246	

133

Sheet No. _____

Name
Address

Pattern #3260

1913
July 28 To Lumber 120 203 July 28 By E.S.B. In 7205 203

1913

Pattern #3262

July 28 To Lumber 120 5026 July 28 By E.S.B. In 7206 5026
Nov 31 To Lumber 120 3515 Nov 31 By E.S.B. In 7205 3515

1913

Pattern #3263

July 28 To Lumber 120 1692 July 28 By E.S.B. In 7205 1692

134

Sheet No. _____

Name
Address

Patterns #3401

1913
June 30 To Lumber 120 7113 June 30 By E.S.B. In 7205 7113
July 31 " " 120 8897 July 31 " " " 7762 8897

1913

Portable Outfit for Taking Telephone Cables

June 30 To Lumber 120 501 June 30 By E.S.B. In 7205 501
July 31 " " 120 4026 July 31 " " " 7101 4026
Aug 30 " " 120 8000 Aug 30 " " " 7912 8000
Sept 30 " " 120 5117 Sept 30 " " " 8026 5117
Oct 31 " " 120 2211 Oct 31 " " " 8138 2211
Nov 30 " " 120 79 Nov 30 " " " 8260 79
Dec 31 " " 120 6209 Dec 31 " " " 1381 6209
Jan 30 109 5968
Feb 31 29 19114
Mar 31 85 115
Apr 30 142 3405
May 31 147 1963
Jun 30 144 801
Jul 31 16 14293

1913

Prod. Drone #3403

June 30 To Lumber 120 763 June 30 By E.S.B. In 7205 763

192

Sheet No. _____

Name
Address

Patterson #3404

June 30	To	Bank	129.	339	June 30	By	E. S. B. Co. Inc.	7626	339
July 31	"	"	129.	263	July 31	"	"	"	263

1913

Patterson #3405

June 30	To	Bank	125.	40	June 30	By	E. S. B. Co. Inc.	7627	40
July 31	"	"	129	210	July 31	"	"	"	210

1913

Photo of Motion Picture Playcard #3413

June 30	To	Bank	120.	279	June 30	By	Sumner	7576	1697
July 31	"	"	116.	210	July 31	"	"	7718	1267
"	"	"	129	3575	"	"	"	7719	755
Aug 31	"	"	116.	3583	"	"	"	7720	585
Sept 30	"	"	721	185	"	"	"	7721	490
"	"	"	109	4478	"	"	"	7722	1465
Oct 31	"	"	127	132764	Aug 31	"	"	7834	3353
"	"	"	8077	2653	"	"	"	7835	655
Nov 30	"	Bank	150	162	"	"	"	7836	2420
"	"	"	145	78123	"	"	"	7837	4555
Dec 31	"	"	156	5455	Sept 30	"	"	7906	1319
"	"	"	224	31471	"	"	"	7966	2312
"	"	"			"	"	"	7990	24678
"	"	"			Oct 31	"	"	8072	3463
"	"	"			Nov 30	"	"	8177	12283
"	"	"			Dec 31	"	"	8216	16064
"	"	"			"	"	"		15744

194

Sheet No. _____

Name
Address

Patterson #3414

July 31	To	Bank	129	5902	July 31	By	E. S. B. Co. Inc.	7763	5902
---------	----	------	-----	------	---------	----	-------------------	------	------

1913

Patterson #3415

July 31	To	Bank	129	516	July 31	By	E. S. B. Co. Inc.	7763	516
---------	----	------	-----	-----	---------	----	-------------------	------	-----

1913

Patterson #3417

July 31	To	Bank	129	715	July 31	By	E. S. B. Co. Inc.	7763	715
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Pattern #3421

July 31	To Lumber	129	37	July 31	By E.S.B. & Son	7763	370
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1913 Pattern Works as Required on Ring Street Feed

July 31	To Lumber	129	3269	July 31	By E.S.B. & Son	7763	3269
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1913 Patterns for Reinforced Cutting Machine

July 31	To Lumber	129	1627	July 31	By E.S.B. & Son	7764	1627
July 31	"	116	78	July 31	"	"	7879

Pattern #3429

July 31	To Lumber	129	600	July 31	By E.S.B. & Son	7764	600
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1913 Pattern #3432

July 31	To Lumber	129	150	July 31	By E.S.B. & Son	7763	150
---------	-----------	-----	-----	---------	-----------------	------	-----

1913 Pattern #3436

July 31	To Lumber	129	395	July 31	By E.S.B. & Son	7764	395
---------	-----------	-----	-----	---------	-----------------	------	-----

138

Sheet No.

Name _____
Address _____

Patterns #3437

[illegible]

1913

Patterns

July	31	To Chamber	129.	170	July 31	By B.S.B. & Son	7765	170.
Aug	30	" "	116.	123	Aug 31	" " "	7879.	173.

1913

Pattern Work on Pacing Collars Grinding Fixture 1913 231147

July 31	To Transfer	129	1639 July 31	By E. L. B. Co. Lorr	7765	1639
Aug 30	" "	130	60 Aug 31	" " " "	7879	60

439

Sheet No.

Name
Address

Patterns #3156

[illegible]

1913

Patterns 1913 11.9.158

Aug 31 20th number 116	110 Aug 31 by S S B. L. 7299	110
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1913

Patterns 3463

Aug 31	2	116	1027	Aug 31	By E.S.B Co Inv 7579	1027
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141

Sheet No. _____

Name
AddressPatterson work on Regulating Standard
R 5167

1912	Aug 31	To Lumber	116	5167	Aug 31 By S.S.B Co Inc	7577	5167

Patterson

1912	Aug 31	To Lumber	116	1422	Aug 31 By S.S.B Co Inc	7577	1422

Patterson

1912	Aug 31	To Lumber	116	109	Aug 31 By S.S.B Co Inc	7577	109
	Sept 30	"	109	9596	Sept 30 " " " "	7590	9596
	Oct 31	"	109	1122	Oct 31 " " " "	7590	1122
	Nov 30	"	47	1122	Nov 30 " " " "	7590	1122

Sheet No. _____

Name
Address

Patterson

R 5177

1912	Aug 31	To Lumber	116	629	Aug 31 By S.S.B Co Inc	7577	629
	Sept 30	"	109	753	Sept 30 " " " "	7590	753

Personal & Experimental Work

1912	Sept 30	To Lumber	18	220	Sept 30 By M.H.H. Inc	1053	25567
	"	"	92	20	Oct 31 " " " "	1158	18798
	"	"	109	253	Nov 30 " " " "	1281	13
	Oct 31	"	122	12798	Dec 31 " " " "	1404	12708
	Nov 30	"	47	13	Jan 31 " " " "	1520	3105
	Dec 31	"	39	732	Feb 28 " " " "	1604	4499
		"	91	1388			
		"	136	719			
		"	156	1147			
		"	159	127			
	Jan 31	"	36	147			
		"	46	167			
		"	47	39			
		"	89	600			
		"	127	2277			
	Feb 28	"	32	128			
		"	124	355			
				574			

5-1912-148

Patterson

1913	Sept 30	To Lumber	109	2358	Sept 30 By S.S.B Co Inc	7590	2358

Sheet No. _____

Name _____

Address

Pocket Corrugating Die #3490

[illegible]

1913

Place Blocks on Bottom of Tinning up Boxes

Sept 30	To Cash	109.	892	Sept 30	By Cash	109.	892
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1913

Plates for Carbon Zile Rheostats
1912 23499

Sept 30.	To Balance	109.	30.50	Sept 30.	By S. H. Boyer	799.	3050.
Oct 31.	"	122	165	Oct 31.	" "	8156	145.
Nov 30.	"	17	3199	Nov 30.	" " "	8215	3195.

Sheet No. _____

Name

Address

Pattern Work
#3503

[illegible]

1913

Pattern 1947# 3509

Sept 30	I Lumber	109	501	Sept 30	By L.B.B. Co Inc	7772	501
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low

Patterns for Cole Milling captured 1913 1/2 3510

Sept 30	To London	109	1774	Sept 30	By S. d. B. Co Inc	777 1/2	1225
---------	-----------	-----	------	---------	--------------------	---------	------

Sheet No. _____

Name _____
Address _____

Patterns #3517

Sept 30	I Lumber	109	250	Sept 30 34 S.B. Co. Inc 7797	280
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Patterns for Lube Ringing Machinery #3517

Oct 31	I Lumber	107	256	Oct 31 S.B. Co. Inc 8107	256
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Revised 1914

1915	30	I Lumber	106	729	Nov 30 S.B. Co. Inc 8107	729
Mar 31	"		106	8750	Mar 31 " "	8750
Apr 30	"		116	8721	Apr 30 " "	8721

Sheet No. _____

Name _____
Address _____

Plan Book & Lumber #3511

Dec 31	Lumber	106	250	Dec 31 S.B. Co. Inc 8107	250
--------	--------	-----	-----	--------------------------	-----

Pattern Book on 3/4 Lube Ringing Machinery #3517

Jan 31	Lumber	107	3218	Jan 31 S.B. Co. Inc 8107	3218
Feb 28	"	106	3325	Feb 28 " "	3325

Pattern Book on 3/4 Lube Stacks Bussing Machinery #3511

Jan 31	Lumber	107	679	Jan 31 S.B. Co. Inc 8107	679
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Sheet No. _____

Name _____
Address _____Photo of Primary Battery Plant
73638

1911		1912		1913		1914		1915	
June 30	Lumber	106.	529	June 30	Edwards & Co	9001	529	June 30	Edwards & Co
July 31	"	136.	447	July 31	"	9103	447	July 31	"
Aug 30	"	90	110	Aug 30	"	9175	110	Aug 30	"
Sept 30	"	115	191	Sept 30	"	9267	191	Sept 30	"
Oct 31	"	157	187	Oct 31	"	9553	187	Oct 31	"
Nov 30	"	177	88	Nov 30	"	10493	88	Nov 30	"

1911		1912		1913		1914		1915	
June 30	Lumber	106.	110	June 30	Edwards & Co	8970	110.	June 30	Edwards & Co
July 31	"	136.	273	July 31	"	9068	273	July 31	"
Aug 30	"	90.	800	Aug 30	"	9215	800.	Aug 30	"

1911		1912		1913		1914		1915	
July 31	Lumber	136	5470	July 31	E. S. B. Co	9074	5470.	July 31	E. S. B. Co
Aug 30	"	90.	966	Aug 30	"	9209	966	Aug 30	"
Sept 30	"	95.	135	Sept 30	"	9311	135	Sept 30	"

Sheet No. _____

Name _____
Address _____Pattern for Shell Sediment Removing Machine
83714

1911		1912		1913		1914		1915	
Aug 30	Lumber	90	1506	Aug 30	E. S. B. Co	909	1506	Aug 30	E. S. B. Co

1911		1912		1913		1914		1915	
Aug 30	Lumber	90	1069	Aug 30	E. S. B. Co	9117	1069	Aug 30	E. S. B. Co

1911		1912		1913		1914		1915	
Aug 30	Lumber	90	895	Aug 30	E. S. B. Co	9113	895	Aug 30	E. S. B. Co
Sept 30	"	95	110	Sept 30	"	9311	110	Sept 30	"

Sheet No. _____

Name _____
Address _____Pattern Work on A-3 Slide Welding Machines
#3731

1941	Sept 30	Lumber	90	1610	Sept 30	Edward B. Co. Inc	9311	1610
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1941	Sept 30	Lumber	90	1750	Sept 30	Edward B. Co. Inc	9311	1750
------	---------	--------	----	------	---------	-------------------	------	------

1941	Sept 30	Lumber	90	620	Sept 30	Edward B. Co. Inc	9311	620
------	---------	--------	----	-----	---------	-------------------	------	-----

Sheet No. _____

Name _____
Address _____Pattern Work Only on B-2 Welding Carriages
#3735

1941	Sept 30	Lumber	90	500	Sept 30	Edward B. Co. Inc	9311	500
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1941	Sept 30	Lumber	90	395	Sept 30	Edward B. Co. Inc	9311	395
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1941	Sept 30	Lumber	95	700	Sept 30	Edward B. Co. Inc	9311	700
------	---------	--------	----	-----	---------	-------------------	------	-----

Pattern Work Only on A-5 Holding Carriage
#3738

1877
Sept 30 Lumber gr 835 Sept 30 Bound B & B In 9312 835

1878
Sept 30 Lumber gr 879 Sept 30 Bound B & B In 9312 879

1879
Sept 30 Lumber gr 996 Sept 30 Bound B & B In 9312 996

Pattern Work Only on A-5 Holding Carriage
#3741

1877
Sept 30 Lumber gr 1110 Sept 30 Bound B & B In 9312 1110

1878
Sept 30 Lumber gr 1093 Sept 30 Bound B & B In 9312 1093
Oct 31 " 115 2876 Oct 31 " 9109 2876

1879
Oct 31 Lumber 115 768 Oct 31 Bound B & B In 9312 768

Patterns on Diamond Grinding Machine
#3529

1915	July 28	Knicker	1147	6790	July 28	By Edmund S. Benson	9741	6790
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1915	July 28	Knicker	1147	193	July 28	By Edmund S. Benson	9742	193
------	---------	---------	------	-----	---------	---------------------	------	-----

Pattern #2715 #3823

1915	July 28	Knicker	1147	598	July 28	By Edmund S. Benson	9743	598
------	---------	---------	------	-----	---------	---------------------	------	-----

Pattern #1715 #3826

Pattern 1916 B
#31113

1915	July 28	Knicker	1147	510	July 28	By Edmund S. Benson	9743	510
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1915	July 28	Knicker	1147	511	July 28	By Edmund S. Benson	9744	550
	July 28	Knicker	1147	511	July 28	By Edmund S. Benson	9744	550

Photo of Window Sill Lifting

1915	Mar 31	Knicker	57	1057	Mar 31	By Edmund S. Benson	9745	1057
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Pattern for Mercury Switch
#3869

Sheet No. _____

Name _____

Address _____

Pattern for Alum Linc Casting
#3857

4	Mar 31	Concher	571	144	Mar 31	By A. B. Gordon	9510	144
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1915

Pattern per Sketch
1915 83873

[illegible]

1915

Pattern for Clutch on B. & S. Screw Machine

<i>Apr 30</i>	<i>Lumber</i>	<i>202</i>	<i>668</i>	<i>Apr 30</i>	<i>Rand. S. B. Co.</i>	<i>9937</i>	<i>668</i>
---------------	---------------	------------	------------	---------------	------------------------	-------------	------------

Sheet No. _____

Name _____

Address _____

Pattern 73718

May 31	Transfer	193	613	May 31	S.B.B. to Jun	1934	613
--------	----------	-----	-----	--------	---------------	------	-----

1915

Falkner #3920

May 31	Chamber	293	130	May 31	E.D.B. Co. Inc	10055	130
June 30	"	251	367	June 30	"	10109	367

but

Salerno 12.2.20

May 31 June 30	Concher "	299 251	73 263	May 31 June 30	S.S. B Co Inv. "	10087 10089	73 263
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163

Sheet No. _____

Name
Address

Parrish & Dineen

June 30	Voucher	62	380	June 30	By S. S. B. Co. Linn 10104	10117
"	"	160	579			
"	"	751	9135			

1915

Parrish & Dineen

June 30	Voucher	119	15	June 30	Edin. B. Co. Linn 10107	3334
"	"	251	3319	"	"	116
July 31	"	112	116			

1915

Phenol Report

June 30	Voucher	167	618	June 30	Phenol Chem. S. M. 10161	1164
July 31	"	122	735	"	"	10253
"	"	87	579	"	"	10499
"	"	41	167	Nov 30	"	3210
"	"	96	579	Dec 31	"	10488
"	"	180	521	"	"	10783
Nov 30	"	15	735			12500.4
"	"	122	293			
"	"	158	277			
Dec 31	"	42	26000.0			
"	"	233	17500			

164

Sheet No. _____

Name
Address

Parrish & Dineen

June 30	Voucher	251	1427	June 30	Edin. B. Co. Linn 10113	1127
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1915

Parrish & Dineen

June 30	Voucher	251	716	June 30	S. S. B. Co. Linn 10105	716
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1915

Parrish & Dineen

June 30	Voucher	251	428	June 30	S. S. B. Co. Linn 10106	428
---------	---------	-----	-----	---------	-------------------------	-----

Sheet No. _____

Name _____

Address _____

Patterns #2970-2971 (Make me each)
#2922

1915 June 30 Voucher 251 1915 June 30 By S.B.B. Co. Dr. 10107 1915

1915 Pattern #2927
June 30 Voucher 251 1915 June 30 By S.B.B. Co. Dr. 10108 1915

1915 Pattern #2941
June 30 Voucher 251 1915 June 30 By S.B.B. Co. Dr. 10109 1915

Sheet No. _____

Name _____

Address _____

Plans 50 516 Bridges
#3943

1915 June 30 Voucher 251 1915 June 30 By S.B.B. Co. Dr. 10109 515

1915 Pattern #3944
July 31 Voucher 256 53 1915 July 31 By S.B.B. Co. Dr. 10110 517
256 690

1915 Pattern #3945
July 31 Voucher 256 1607 1915 July 31 By S.B.B. Co. Dr. 10110 1607

Sheet No.

Name
Address

Address

Pattern for Bench Lathes

3753

July 31	Vancouver	186	7958	July 31	Edwin Phoenix Park	10413	7958
Sept 30	"	188	378	Sept 30	"	10399	378

1915	Bliss ¹⁹¹⁵ 1916 Camp 1915					
July 31	oucher	no	538	July 31	2000	538

<div style="text-align: center;"> <i>Pattern for Bear Guards</i> <i>1915</i> </div>									
Aug 31	Number	221	9547	Aug 31	Sub. Lm Lm	10309	9547		

Sheet No.

Name _____
Address _____

Address

Pattern of low Boyes

10.4.4

Jan 31	Vanhook	11.5	21.51	June 21	Edison Phone Hook In 10850	21.51
--------	---------	------	-------	---------	----------------------------	-------

Klamath Bolder Hydro									
1976		1977		1978		1979		1980	
Jan 31	Klamath	1180	1187	Jan 2	Elm Creek	1180	1187	1180	1187

Patterson									
1916									
June 31	Vanhook	145	1978	June 31	E. S. B. La Jolla	10047			1972

Name _____

Address _____

Patented for Diamond Grinding Machine
1898

1886									
Jan	31	Wm. L. L.	1886	3.38	Jan	31	Edw. L. L.	1886	3.38

Sheet No.

Name _____
Address _____

Suttons Dry Co. 81-82.

1977						1977					
Jan 31	Cumulative	145		1976 Jan 31	E.S.B. Co. Inc.	10814		1476			

Clatterwell					
1976				1977	
June 21	Transfer	1118	2476	June 21	E. S. B. Co. Inc
				10143	2476

Pallaresia # 7920, 17.314
1966
June 21 Lumber 148 1976 June 21 B.S.B. Co. Inc. 100115 1976

[illegible]

Daddie Speddy											
1911											
Jan 31	Transfer	126			127	Jan 31	100	100	100	100	100
Feb 1	"	90			50	Feb 1	100	100	100	100	100
Feb 1	"	126			127	Feb 1	100	100	100	100	100
Feb 1	"	90			127	Feb 1	100	100	100	100	100

Sheet No. _____

Name _____
Address _____National 1891-1926
Ed. 1891

1891	June 31	December	1891	1891	June 31	E. L. B. Borden	1891	1891
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1891	June 31	December	1891	1891	June 31	E. L. B. Borden	1891	1891
------	---------	----------	------	------	---------	-----------------	------	------

1891	July 29	December	1891	1891	July 29	E. L. B. Borden	1891	1891
		"	23	1891				
		"	26	1891				
		"	28	1891				
		"	126	1891				

Sheet No. _____

Name _____
Address _____Linnings Left Borden
Ed. 1891

1891	July 29	December	1891	1891	July 29	E. L. B. Borden	1891	1891
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1891	July 29	December	1891	1891	July 29	E. L. B. Borden	1891	1891
------	---------	----------	------	------	---------	-----------------	------	------

1891	July 29	December	1891	1891	July 29	E. L. B. Borden	1891	1891
------	---------	----------	------	------	---------	-----------------	------	------

Patterns for New Journal / Skuff
41157

1916	Apr 30	Vanhook	91	176.57	Apr 29	E.P. 10th St	11206	176.57
	May 31	"	131	139.17	"	"	11207	139.17

1916
Patterns for New Journal / Skuff # 41167

Apr 30	Vanhook	91	102.97	Apr 29	E.P. 10th St	11206	102.97
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1916
Patterns for New Journal / Skuff # 41177

Apr 30	Vanhook	91	57.07	Apr 29	E.P. 10th St	11206	57.07
	"	67	11.13	"	"	11207	11.13

Photo of Mr. E. J. Davenport
41180

1916	May 31	Vanhook	131	107.71	May 31	E.P. 10th St	11206	107.71
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1916
Paddle Spoken # 41197

May 31	Vanhook	131	107.71	May 31	E.P. 10th St	11206	107.71
--------	---------	-----	--------	--------	--------------	-------	--------

Paddle Spoken # 41198

1916	May 31	Vanhook	131	107.71	May 31	E.P. 10th St	11206	107.71
	June 30	"	67	11.13	"	"	11207	11.13
			70	10.00				10.00
			100	10.00				10.00

Sheet No.

Name

Address

Photographic Work
of 30x25

DATE		TIME		PLACE		EXPOSURE		DEVELOPMENT		PRINTING	
June 30	10.5	26.17	June 30	E. P. H. G.	26.17	11.57	26.17	11.57	26.17	11.57	26.17
July 31	12.5	26.17	July 31	"	"	11.57	26.17	11.57	26.17	11.57	26.17

Photos of Disc Photo. Parts

DATE		TIME		PLACE		EXPOSURE		DEVELOPMENT		PRINTING	
June 30	10.5	14.15	June 30	E. P. H. G.	14.15	11.57	14.15	11.57	14.15	11.57	14.15

Photos from Bottom of Polaris Plate

DATE		TIME		PLACE		EXPOSURE		DEVELOPMENT		PRINTING	
June 30	10.5	14.15	June 30	E. P. H. G.	14.15	11.57	14.15	11.57	14.15	11.57	14.15

Sheet No.

Name

Address

Plans and Specifications
H. H. V. 16

DATE		TIME		PLACE		EXPOSURE		DEVELOPMENT		PRINTING	
June 30	10.5	75.36	June 30	E. P. H. G.	75.36	11.57	75.36	11.57	75.36	11.57	75.36

Photos of Mine Lamp, etc.

DATE		TIME		PLACE		EXPOSURE		DEVELOPMENT		PRINTING	
June 30	10.5	75.36	June 30	E. P. H. G.	75.36	11.57	75.36	11.57	75.36	11.57	75.36

Photograph of Day for B. L. Cell

DATE		TIME		PLACE		EXPOSURE		DEVELOPMENT		PRINTING	
July 31	12.5	16.17	July 31	E. P. H. G.	16.17	11.57	16.17	11.57	16.17	11.57	16.17

14390-

[illegible]

Repairs on		Repair on	23 Remoral patterns
45 H. P. Mory #995-100-7		Red threadbaker	#215 Remoral patterns
Radium Equipment #1520-1		Recd Balling	20 Reprint J.R. Lom
Repairs on Mrs Edison		Machine det	2175 Remora J.W. Lom
Threadbaker auto #1976	1	Ring Steeking	25 Remora ship Lath
Repairing Book auto		Machine	#2178 Reduction 1/2
for use in New York		Repair Waverly Mach	26 Ratcatch Blocks
Electric #1955	2	for Murlage Det	#2176 Regan C. R. Lom
Repairs on		S- Repair King Mould	#2204 Rema & Bessan
Waverly Wagon #1475	1	Russell B. G	Repair Drill
Repairs on	3	L + M	101 Remora & Bessan
San American Auto #1979		Repair Clean Pump	#2158 Remora
Repairs on J. Miller		Reip Chas Lom-1	102 Reelbott
Threadbaker auto #1994		Run-ber bottom	25 Reel Assembled
Repairs & Supplies	5	on Drum	#2253 State
for 45 H.P. Mors auto #2001		Rail for Reduction	101 Ring Pattern
Repairs on Mr Hughes	6	Turnace	#2257 Ring Pattern
Columbia Auto #1921		Repairing Forklift	103 Ring Pattern
Record Binding Mach	3000	Repair & Made new	29 Ring Pattern
Revolving drum for	10	Ottens & S. J. Mac	2323 Ring Pattern
Separating Shale	#2040	Repair Patterns	2323 Ring Pattern
Book Drilling	11	Repair Patterns	#2257 Ring Pattern
Exp. by Electricity	2444	Repair Motors	#2197 Ring Pattern
Reinforcing	12	Repair 6 sets	2175 Ring Pattern
Lamp Fixing	2046	Repairs & Supplies	30 Ring Pattern
Record Equipment	13	Rebar & Electric	#2193 Ring Pattern
by A. N. Pelt	#2041	Repair Patterns	#2153 Ring Pattern
Repairs on Am		Repairs & Supplies	31 Ring Pattern
erican auto as per instructions from	14	% Hutchinson Auto	2153 Ring Pattern
Mr Edison	#2057	Repair shaft	#2153 Ring Pattern
Repairing Miers	15	Recording Machines	2323 Ring Pattern
Shops for Sales Lads	#2050	for Drive Record	2196 Ring Pattern
Rebar with safety		Repairs etc on	33 Ring Pattern
valve & Hammer	#2063	Anderson Electric	2157 Ring Pattern
Randolph Mrs J. F.		Repair Pils & Corg	2271 Ring Pattern
Lubric & Matt	101	Rail	#2257 Ring Pattern
Rolls for Rolling		Regal in auto	#2247 Ring Pattern
Moiled Shells	#2068	Rethabets	#2063 Ring Pattern
Rolls to press beam	18	Repairs etc to Kingly	#2063 Ring Pattern
on nickel tubing	#2073	Reaming Machine	2175 Ring Pattern
Rolls for Hydrate		Reaming signal	#2173 Ring Pattern
Finishing	#2083	Rectifiers	#2173 Ring Pattern
Repairing Lath	20	Recording Blanks	#2173 Ring Pattern
on 2nd floor	#2133	Reformers & P	16 Repairs & Supplies
Reaming Machine	21	Reforming Machine	#2173 Ring Pattern
per Pils (4)	#2134	Repair Armatures	#2173 Ring Pattern
Record Cabinet		Repair Armatures	#2173 Ring Pattern
(Steel)	#2136	Rein & Bessan	2173 Ring Pattern
Rooming Mrs M.		Rectifiers	2173 Ring Pattern
L + M	101	Recherate	#2173 Ring Pattern
		Records (Cylind)	#2173 Ring Pattern

Repair Sattlers	\$396.
Repair Sattlers	\$397.
Repair Sattlers	\$398.
Repair Sattlers	\$399.
Repair Sattlers	\$400.
Repair Sattlers	\$401.
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Repair Sattlers	\$498.
Repair Sattlers	\$499.
Repair Sattlers	\$500.

Sheet No.

Name _____

Address

Repairs on Mrs Edison's Studebaker Auto. 41026

1912		1913		1914		1915	
June 30	To Balance	2.0	1.116	June 30	By Cash & B. & S. Inc.	6.48	11.44
		50	...	Aug 31		79.33	3.32
		92	2.247	Nov 30		80.19	57.61
Aug 30		12.5	11.53	Nov 30		82.77	76
		47	2.18	Nov 31		82.01	57.0
Sept 30		11.6	81	Nov 31		82.77	81.44
		11	50.00	Jan 20		82.01	57.42
		10.9	3.66	Mar 31		81.18	2.635
Nov 30		14.1	0.6	Jun 30		80.00	1.27
Dec 31		4.3	1.50	July 31		81.18	1.43.9
1914		10.6	6.0	Aug 30		82.01	57.51
Mar 31		21	1.381	Sept 30		82.14	51.67
		6.2	4.50	Oct 31		81.20	60
		10.6	6.143	Nov 20		81.06	4.00
Apr 30		9	25.00	Nov 31		82.73	7.22
		31	9.62	Jan 01		82.73	51.47
		3.7	2.12				
		53	2.56				
		11.6	1.187				
May 31		10.1	2.655				
June 30		20	1.27				
July 31		13.6	1.489				
Aug 30		7.8	2.111				
		7.9	35				
		9.0	3.467				
Sept 30		21	2.111				
		9.5	1.21.8				
Oct 31		1.12	60				
Nov 30		18.9	4.20				
Dec 31		13.6	3.66				
1915		15.2	3.66				
Jan 31		13.8	3.66				
			3.66				

Sheet No. _____

Name
Address

Sheet No. _____

Name
Address

Repair on J. Miller - Shidebaker Auto #1994

1908

Mar 31 To Voucher

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apl 30
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1908

Mar 31 By B.W. Shidebaker

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107
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433
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694
1197
1305
1385
1462
1999
2097
2232
2614
2854
3091
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3474
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Name
Address

Repairs on J. V. Miley Studebaker auto # 1994

1911

1911	1911	1911	1911
May 31 To voucher	115	237.31	Brothmann
" " "	116	62 May 31 By E.C. Long Ins	4113
" " "	117	311 June 30	4315
" " "	117	51 July 31	4472
June 30	117	75 Aug 31	4520
" " "	117	23 Sept 30	4773
July 31	110	209 Oct 30	4923
" " "	111	415 Nov 30	5076
Aug 31	117	50 Dec 30	5215
" " "	120	85 Jan 31	5315
" " "	121	Feb 31	5478
Sept 30	125	12 Mar 30	5630
" " "	129	12 Apr 30	579
" " "	110	26 July 31	5846
Oct 31	112	215 Aug 31	6082
" " "	113	123 Sept 30	6201
Nov 30	117	216 Oct 31	6462
" " "	118	1261	7116
" " "	119	36	8294
Dec 30	122	312	
Jan 31	135	327	
Feb 29	144	3207	
Mar 30	147	3216	
Apr 30	142	3263	
July 31	142	3277	
Aug 31	149	3162	
Sept 30	121	3151	
Oct 30	125	3151	
Nov 30	124	3222	
Dec 30	124	3222	
1912	140	1436	1436
Apr 30 To voucher	88	145	1528
May 31	114	1216	1528
June 30	110	330	1528
" " "	120	324	1528
July 31	121	713	1528
Aug 31	129	801	1528
Sept 30	96	778	1528

Name
Address

Repairing & supplies for U.S. H.P. Merg auto # 2004

1910	1910	1910	1910
Nov 30 To voucher	55	144890	Brothmann
" " "	108	10 Jan 30 By Mrs J.A.B. Long	3090
" " "	125	222 31	3204
" " "	129	361 Jan 31	3365
Dec 31	3	1911 Feb 1st	3532
" " "	45	362 Mar 31	3744
" " "	81	676 April 30	3913
" " "	116	111 May 31	4139
" " "	119	631 June 30	4300
Jan 31	91	2330	4487
" " "	94	4828	
Feb 28	4	577	
" " "	28	5506	
" " "	33	1260	
" " "	34	5044	
" " "	44	201	
" " "	48	08	
" " "	48	05	
" " "	49	744	
" " "	56	3956	
" " "	57	210	
" " "	64	705	
" " "	68	872	
" " "	95	359	
" " "	103	298	
" " "	104	2977	
Mar 31	9	1794	
" " "	17	1325	
" " "	20	1500	
" " "	31	75	
" " "	48	1900	
" " "	60	144	
" " "	77	523	
" " "	89	821	
" " "	81	2103	
" " "	110	1809	
" " "	116	50	
" " "	117	1904	
Apr 30	53	1275	
" " "	69	2000	
" " "	99	30	
" " "	116	2195	
" " "	114	11700	
" " "	115	1136	
May 31	90	6136	
" " "	28	750	
" " "	115	192	
" " "	117	4857	
June 30	7	137	
" " "	62	364	
" " "	82	264	
" " "	110	784	
" " "	112	190	
" " "	118	16	
" " "	119	15977	
" " "	119	15977	

Name
Address

Repair & supplies for U.S.N.R. mss auto
#2004

1911		1911		1911	
July 31 To Voucher	4	July 31 To Voucher	4440	July 31 To Voucher	4440
" " " "	31	" " " "	4640	" " " "	4640
" " " "	33	" " " "	4745	" " " "	4745
" " " "	53	" " " "	4942	" " " "	4942
" " " "	111	" " " "	5092	" " " "	5092
" " " "	112	" " " "	5207	" " " "	5207
aug 31 " "	39	" " " "	5373	" " " "	5373
" " " "	52	" " " "	5510	" " " "	5510
" " " "	83	" " " "	5653	" " " "	5653
" " " "	98	" " " "	5813	" " " "	5813
" " " "	105	" " " "	5961	" " " "	5961
" " " "	107	" " " "	6109	" " " "	6109
" " " "	117	" " " "	6259	" " " "	6259
" " " "	118	" " " "	6403	" " " "	6403
sept 30 " "	2	" " " "	6558	" " " "	6558
" " " "	38	" " " "	6704	" " " "	6704
" " " "	57	" " " "	6859	" " " "	6859
" " " "	85	" " " "	7009	" " " "	7009
" " " "	108	" " " "	7159	" " " "	7159
" " " "	110	" " " "	7309	" " " "	7309
Oct 31 " "	67	" " " "	7459	" " " "	7459
" " " "	112	" " " "	7609	" " " "	7609
" " " "	115	" " " "	7759	" " " "	7759
nov 30 " "	117	" " " "	7909	" " " "	7909
" " " "	119	" " " "	8059	" " " "	8059
dec 30 " "	122	" " " "	8209	" " " "	8209
1912 Jan 31 " "	69	" " " "	8359	" " " "	8359
" " " "	106	" " " "	8509	" " " "	8509
" " " "	138	" " " "	8659	" " " "	8659
" " " "	52	" " " "	8809	" " " "	8809
Feb 29 " "	144	" " " "	8959	" " " "	8959
" " " "	147	" " " "	9109	" " " "	9109
mar 30 " "	77	" " " "	9259	" " " "	9259
apl 30 " "	108	" " " "	9409	" " " "	9409
" " " "	128	" " " "	9559	" " " "	9559
" " " "	137	" " " "	9709	" " " "	9709
" " " "	142	" " " "	9859	" " " "	9859
May 31 " "	66	" " " "	10009	" " " "	10009
" " " "	140	" " " "	10159	" " " "	10159
June 29 " "	70	" " " "	10309	" " " "	10309
" " " "	155	" " " "	10459	" " " "	10459
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" " " "	130	" " " "	10759	" " " "	10759
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July 31 " "	102	" " " "	11059	" " " "	11059
aug 31 " "	129	" " " "	11209	" " " "	11209
sept 30 " "	77	" " " "	11359	" " " "	11359
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Oct 31 " "	140	" " " "	11659	" " " "	11659
Nov 30 " "	121	" " " "	11809	" " " "	11809
1912	212	" " " "	11959	" " " "	11959
Aug 31 To Voucher	116	Aug 31 To Voucher	12109	Aug 31 To Voucher	12109
Sept 30 " "	116	Sept 30 " "	12259	Sept 30 " "	12259
Nov 30 " "	21	Nov 30 " "	12409	Nov 30 " "	12409
Jan 31 To Voucher	72	Jan 31 To Voucher	12559	Jan 31 To Voucher	12559

Name
Address

Repair on Red Studebaker

#2152

1910		1911		1911	
apl 30 To Voucher	116	apl 30 To Voucher	116	apl 30 To Voucher	116
" " " "	117	" " " "	117	" " " "	117
May 31 " "	112	May 31 " "	112	May 31 " "	112
" " " "	117	" " " "	117	" " " "	117
" " " "	115	" " " "	115	" " " "	115
June 30 " "	25	June 30 " "	25	June 30 " "	25
" " " "	86	" " " "	86	" " " "	86
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" " " "	92	" " " "	92	" " " "	92
July 31 " "	22	July 31 " "	22	July 31 " "	22
" " " "	83	" " " "	83	" " " "	83
" " " "	89	" " " "	89	" " " "	89
aug 31 " "	90	aug 31 " "	90	aug 31 " "	90
" " " "	93	" " " "	93	" " " "	93
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sept 30 " "	32	sept 30 " "	32	sept 30 " "	32
" " " "	97	" " " "	97	" " " "	97
Oct 31 " "	98	Oct 31 " "	98	Oct 31 " "	98
" " " "	93	" " " "	93	" " " "	93
nov 30 " "	94	nov 30 " "	94	nov 30 " "	94
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dec 31 " "	33	dec 31 " "	33	dec 31 " "	33
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Jan 31 " "	117	Jan 31 " "	117	Jan 31 " "	117
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Feb 29 " "	72	Feb 29 " "	72	Feb 29 " "	72
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" " " "	106	" " " "	106	" " " "	106
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" " " "	103	" " " "	103	" " " "	103
Mar 31 To Voucher	33	Mar 31 To Voucher	33	Mar 31 To Voucher	33
" " " "	117	" " " "	117	" " " "	117
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apl 30 " "	113	apl 30 " "	113	apl 30 " "	113
" " " "	114	" " " "	114	" " " "	114
May 31 " "	106	May 31 " "	106	May 31 " "	106
" " " "	115	" " " "	115	" " " "	115
June 30 " "	116	June 30 " "	116	June 30 " "	116
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July 31 " "	117	July 31 " "	117	July 31 " "	117
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Sheet No.

Name

Address

Reparations Red Stud Baker

62157

Sept 30	Lumber	22	2026	Dec 31	By Capital Loss	222	222.11
May 31	"	202	457.6				
June 30	"	251	113.9				
July 31	"	50	102.5				
Aug 31	"	206	44.0				
Sept 30	"	27	120.0				
Oct 30	"	200	290.0				
Nov 30	"	35	45.8				
Dec 31	"	171	112.0				
Jan 30	"	116	48.0				
Feb 30	"	214	22.0				
Mar 30	"	126	113.1				
Apr 30	"	206	128				
May 31	Lumber	118	220.11				
June 30	"	126	877				
July 31	"	35	812				
Aug 30	"	119	173.0				
Sept 30	"	26	55.0				
Oct 31	"	105	85.1				
Nov 30	"	105	122.8				
Dec 31	"	132	33.8				
	"		10.58				

Sheet No. 30

Name

Address

Reparations, Supplies J. Bulcock Electric #2430

includes 7 not to be charged with labor - only material

May 31	To Voucher	115	27.34	May 31	By Capital Loss	4142	27.35
June 30	"	117	24	June 30	"	4326	7.5
July 31	"	117	77	July 31	"	4646	3.5
Aug 31	"	118	23	Aug 30	"	4788	11
Sept 30	"	111	168	Sept 30	"	5077	3.5
Oct 30	"	119	29	Oct 30	"	5234	3.5
Nov 30	"	120	36.71	Nov 30	"	5372	3.5
Dec 31	"	110	11	Dec 31	"	5466	3.5
Jan 31	"	112	8.6	Jan 31	"	5572	3.5
Feb 30	"	117	3.72	Feb 30	"	5672	3.5
Mar 30	"	119	1.0	Mar 30	"	5772	3.5
Apr 30	"	122	1.5	Apr 30	"	5872	3.5
May 30	"	124	1.5	May 30	"	5972	3.5
June 30	"	60	1.5	June 30	"	6072	3.5
July 30	"	127	2.2	July 30	"	6172	3.5
Aug 30	"	142	6.6	Aug 30	"	6272	3.5
Sept 30	"	99	1.3	Sept 30	"	6372	3.5
Oct 30	"	140	3.3	Oct 30	"	6472	3.5
Nov 30	"	64	2.7	Nov 30	"	6572	3.5
Dec 30	"	96	2.7	Dec 30	"	6672	3.5
Jan 31	"	145	2.7	Jan 31	"	6772	3.5
Feb 31	"	3	1.5	Feb 31	"	6872	3.5
Mar 31	"	64	1.6	Mar 31	"	6972	3.5
Apr 31	"	82	72	Apr 31	"	7072	3.5
May 31	"	115	278	May 31	"	7172	3.5
June 31	"	142	5.31	June 31	"	7272	3.5
July 31	"	9	2.2	July 31	"	7372	3.5
Aug 31	"	31	47.5	Aug 31	"	7472	3.5
Sept 31	"	44	2.53	Sept 31	"	7572	3.5
Oct 31	"	67	6.26	Oct 31	"	7672	3.5
Nov 31	"	108	1.25	Nov 31	"	7772	3.5
Dec 31	"	123	1.0	Dec 31	"	7872	3.5
Jan 30	"	129	1.71	Jan 30	"	7972	3.5
Feb 30	"	118	1.5	Feb 30	"	8072	3.5
Mar 30	"	121	1.25	Mar 30	"	8172	3.5
Apr 30	"	80	1.0	Apr 30	"	8272	3.5
May 30	"	149	1.25	May 30	"	8372	3.5
June 30	"	149	1.25	June 30	"	8472	3.5
July 30	"	122	1.25	July 30	"	8572	3.5
Aug 30	"	155	1.25	Aug 30	"	8672	3.5
Sept 30	"	155	1.25	Sept 30	"	8772	3.5
Oct 30	"	174	1.25	Oct 30	"	8872	3.5
Nov 30	"	120	1.25	Nov 30	"	8972	3.5
Dec 30	"	110	1.25	Dec 30	"	9072	3.5
Jan 31	"	112	1.25	Jan 31	"	9172	3.5
Feb 31	"	129	1.25	Feb 31	"	9272	3.5
Mar 31	"	116	1.25	Mar 31	"	9372	3.5
Apr 30	"	120	1.25	Apr 30	"	9472	3.5
May 30	"	110	1.25	May 30	"	9572	3.5
June 30	"	112	1.25	June 30	"	9672	3.5
July 30	"	129	1.25	July 30	"	9772	3.5
Aug 30	"	116	1.25	Aug 30	"	9872	3.5

Name
Address

Name _____
Address _____

Repairs & Supplies 1/2 Hutchinsons auto
#2485

1911		1911	
June 30 To Cash	117	172 June 30 By Merch. Inv.	4350
July 31 " "	110	56 July 31 " "	4492
Aug 31 " "	111	56 Aug 31 " "	4605
Sept 30 " "	117	112 " "	4666
Oct 31 " "	106	65 Sept 30 " "	4789
Nov 30 " "	117	100 Oct 31 " "	4944
Dec 31 " "	120	25 Nov 31 " "	5225
Jan 31 " "	121	118 Dec 31 " "	5575
Feb 29 " "	108	164 Jan 30 " "	5855
Mar 31 " "	109	164 Feb 29 " "	5855
Apr 30 " "	112	533 Mar 31 " "	5964
May 31 " "	113	695 Apr 30 " "	6113
June 30 " "	59	150 May 31 " "	6256
July 31 " "	135	834 June 30 " "	6505
Aug 31 " "	24	1247 July 31 " "	6752
Sept 30 " "	25	300 Aug 31 " "	6952
Oct 31 " "	69	515 Sept 30 " "	7197
Nov 30 " "	71	124 Oct 31 " "	7421
Dec 31 " "	95	600 Nov 30 " "	7621
Jan 31 " "	100	150 Dec 31 " "	7871
Feb 29 " "	118	975 Jan 31 " "	8121
Mar 31 " "	133	30 Feb 29 " "	8371
Apr 30 " "	140	576 Mar 31 " "	8621
May 31 " "	141	341 Apr 30 " "	8871
June 30 " "	21	176 May 31 " "	9121
July 31 " "	110	318 June 30 " "	9371
Aug 31 " "	126	40 July 31 " "	9621
Sept 30 " "	177	873 Aug 31 " "	9871
Oct 31 " "	17	157 Sept 30 " "	10121
Nov 30 " "	80	168 Oct 31 " "	10371
Dec 31 " "	108	665 Nov 30 " "	10621
Jan 31 " "	112	693 Dec 31 " "	10871
Feb 29 " "	114	277 Jan 31 " "	11121
Mar 31 " "	136	30 Feb 29 " "	11371
Apr 30 " "	14	244 Mar 31 " "	11621
May 31 " "	21	792 Apr 30 " "	11871
June 30 " "	46	60 May 31 " "	12121
July 31 " "	66	260 June 30 " "	12371
Aug 31 " "	82	615 July 31 " "	12621
Sept 30 " "	99	55 Aug 31 " "	12871
Oct 31 " "	120	284 Sept 30 " "	13121
Nov 30 " "	138	170 Oct 31 " "	13371
Dec 31 " "	140	223 Nov 30 " "	13621
Jan 31 " "	13	173 Dec 31 " "	13871
Feb 29 " "	53	100 Jan 31 " "	14121
Mar 31 " "	71	207 Feb 29 " "	14371
Apr 30 " "	106	50 Mar 31 " "	14621
May 31 " "	143	70 Apr 30 " "	14871
June 30 " "	140	31 May 31 " "	15121
July 31 " "	25	124 June 30 " "	15371
Aug 31 " "	141	70 Aug 31 " "	15621
Sept 30 " "	142	102 Sept 30 " "	15871
Oct 31 " "	31	132 Oct 31 " "	16121
Nov 30 " "	47	200 Nov 30 " "	16371
Dec 31 " "	69	150 Dec 31 " "	16621

Name
AddressRepairs & Supplies to Hutchinsons Auto
#2485Name
AddressRepairs & Supplies to Hutchinsons Auto
#2485

1911			1912			1913			1914		
aug 31	Jan 20	102	120	aug 31	By Mr. R. N. Kim	6401	6985				
" "	" "	129	139	Sept 30	" " "	6511	11,256				
Sept 30	" "	121	121	Oct 31	" " "	6676	11,256				
Oct 31	" "	88	111	Nov 30	" " "	6781	11,256				
" "	" "	97	110	Dec 31	" " "	6894	11,256				
" "	" "	108	135	Jan 31	" " "	7021	11,256				
" "	" "	109	13	Feb 28	" " "	7156	11,256				
Nov 30	" "	109	147				11,256				
" "	" "	20	110								
" "	" "	38	600								
" "	" "	13	110								
" "	" "	121	145								
Dec 31	" "	116	152								
" "	" "	80	514								
" "	" "	137	351								
" "	" "	102	301								
1913	" "	155	147								
Jan 31	" "	81	118								
" "	" "	115	165								
Feb 28	" "	26	67								
" "	" "	29	242								
" "	" "	69	251								
" "	" "	73	270								
" "	" "	91	215								
" "	" "	121	111								
			111								
			171802								

Mar 31	20	29	170	Mar 31	By Mr. Hutchinson	7290	5358
" "	" "	41	275	Apr 30	" " "	7425	11,456
" "	" "	68	200	May 31	" " "	7514	12,853
" "	" "	93	571	Jun 30	" " "	7690	22,761
" "	" "	107	110	July 31	" " "	7818	23,000
" "	" "	118	30	Aug 31	" " "	7926	6430
Apr 30	" "	120	526				
" "	" "	31	165				
" "	" "	63	118				
" "	" "	102	168				
" "	" "	137	160				
" "	" "	110	106				
May 31	" "	96	120				
" "	" "	117	120				
June 30	" "	110	240				
" "	" "	111	211				
" "	" "	101	150				
" "	" "	62	120				
" "	" "	68	116				
" "	" "	77	79				
" "	" "	80	10				
" "	" "	115	50				
" "	" "	118	239				
" "	" "	128	146				
July 31	" "	129	250				
Aug 31	" "	116	113				
" "	" "	116	113				

1913			1914			1915			1916		
Sept 30	20	27	2520	Sept 30	By Mr. Hutchinson	8051	12058				
" "	" "	29	352								
" "	" "	20	26								
" "	" "	65	170								
" "	" "	74	114								
" "	" "	109	1178								

Sheet No. _____

Name
AddressSheet No. 32Name
AddressRecording Machine for Disc Records
2496

1911					1911				
July	31	20 inches	75		July 31	By La E. Machine	4429	95	
Sept 30			108		Sept 30	"	"	4723	6786
"	"	"	109		Oct 31	"	"	4770	21104
"	"	"	110		Nov 30	"	"	5014	19338
"	"	"	111		Dec 31	"	"	5158	21104
Oct 31			78		Jan 31	"	"	5232	16831
"	"	"	97		Feb 29	"	"	5438	16831
"	"	"	108		Mar 30	"	"	5559	16831
"	"	"	112						16831
"	"	"	113						16831
"	"	"	114						16831
"	"	"	115						16831
Nov 30			15						16831
"	"	"	106						16831
"	"	"	113						16831
"	"	"	117						16831
"	"	"	118						16831
"	"	"	117						16831
"	"	"	110						16831
Dec 30			30						16831
"	"	"	54						16831
"	"	"	109						16831
"	"	"	115						16831
Jan 31			122						16831
"	"	"	16						16831
"	"	"	42						16831
"	"	"	86						16831
"	"	"	100						16831
"	"	"	124						16831
"	"	"	127						16831
"	"	"	132						16831
Feb 29			138						16831
"	"	"	18						16831
"	"	"	47						16831
"	"	"	53						16831
"	"	"	65						16831
"	"	"	131						16831
"	"	"	132						16831
"	"	"	142						16831
"	"	"	144						16831
Mar 30			16						16831
"	"	"	22						16831
"	"	"	75						16831
"	"	"	78						16831
"	"	"	90						16831
"	"	"	95						16831
"	"	"	110						16831
"	"	"	111						16831
"	"	"	121						16831
"	"	"	122						16831
"	"	"	127						16831
Apr 30			17						16831
"	"	"	108						16831
"	"	"	123						16831

Sheet No. _____

Name _____
Address _____

Repairs etc on Anderson Electric #2539

[illegible]

Sheet No.

Name _____
Address _____

Repairs etc on Anderson Electric

Date	Time	Lat	Long	Alt	Wind	Temp	Humidity	Pressure	Clouds	Remarks
1901										
Jan 30		30	120	10	SE	65	85	30.1	100	Clear
Feb 1		30	120	10	SE	65	85	30.1	100	Clear
Feb 2		30	120	10	SE	65	85	30.1	100	Clear
Feb 3		30	120	10	SE	65	85	30.1	100	Clear
Feb 4		30	120	10	SE	65	85	30.1	100	Clear
Feb 5		30	120	10	SE	65	85	30.1	100	Clear
Feb 6		30	120	10	SE	65	85	30.1	100	Clear
Feb 7		30	120	10	SE	65	85	30.1	100	Clear
Feb 8		30	120	10	SE	65	85	30.1	100	Clear
Feb 9		30	120	10	SE	65	85	30.1	100	Clear
Feb 10		30	120	10	SE	65	85	30.1	100	Clear
Feb 11		30	120	10	SE	65	85	30.1	100	Clear
Feb 12		30	120	10	SE	65	85	30.1	100	Clear
Feb 13		30	120	10	SE	65	85	30.1	100	Clear
Feb 14		30	120	10	SE	65	85	30.1	100	Clear
Feb 15		30	120	10	SE	65	85	30.1	100	Clear
Feb 16		30	120	10	SE	65	85	30.1	100	Clear
Feb 17		30	120	10	SE	65	85	30.1	100	Clear
Feb 18		30	120	10	SE	65	85	30.1	100	Clear
Feb 19		30	120	10	SE	65	85	30.1	100	Clear
Feb 20		30	120	10	SE	65	85	30.1	100	Clear
Feb 21		30	120	10	SE	65	85	30.1	100	Clear
Feb 22		30	120	10	SE	65	85	30.1	100	Clear
Feb 23		30	120	10	SE	65	85	30.1	100	Clear
Feb 24		30	120	10	SE	65	85	30.1	100	Clear
Feb 25		30	120	10	SE	65	85	30.1	100	Clear
Feb 26		30	120	10	SE	65	85	30.1	100	Clear
Feb 27		30	120	10	SE	65	85	30.1	100	Clear
Feb 28		30	120	10	SE	65	85	30.1	100	Clear
Feb 29		30	120	10	SE	65	85	30.1	100	Clear
Mar 1		30	120	10	SE	65	85	30.1	100	Clear
Mar 2		30	120	10	SE	65	85	30.1	100	Clear
Mar 3		30	120	10	SE	65	85	30.1	100	Clear
Mar 4		30	120	10	SE	65	85	30.1	100	Clear
Mar 5		30	120	10	SE	65	85	30.1	100	Clear
Mar 6		30	120	10	SE	65	85	30.1	100	Clear
Mar 7		30	120	10	SE	65	85	30.1	100	Clear
Mar 8		30	120	10	SE	65	85	30.1	100	Clear
Mar 9		30	120	10	SE	65	85	30.1	100	Clear
Mar 10		30	120	10	SE	65	85	30.1	100	Clear
Mar 11		30	120	10	SE	65	85	30.1	100	Clear
Mar 12</										

Address

Address

Date	To		1911	1912	1913	1914	1915	1916	1917
Oct 31	To Balance		31	120	267	By J. A. Edwards	250		199.47
" "	" "		49	151.79					
" "	" "		112	250					
" "	" "		113	68					
" "	" "		115	63					
Nov 30	" "		95	151.79					
Dec 31	" "		35	167.00					
" "	" "		122	115					
Jan 31	" "		108	167.00					
" "	" "		138	115					
Feb 29	" "		102	194.35					
" "	" "		144	235					
				199.47					
Apr 30	" "		108	300	1913				199.47
May 31	" "		140	29	By J. A. Edwards	250			166.55
July 31	" "		120	247					
Aug 31	" "		129	524					
Oct 31	" "		97	325					
" "	" "		159	344					
Nov 30	" "		124	313					
Dec 31	" "		125	120.00					
				166.55					166.55
Apr 30	To Balance		115	188	1913				166.55
May 31	" "		48	100	By J. A. Edwards	250			77.77
" "	" "		31	162					
June 30	" "		89	245					
" "	" "		89	453.90					
" "	" "		125	112					
July 31	" "		9	1800					
" "	" "		162	27.87					
" "	" "		112	140					
" "	" "		129	1008					
Aug 30	" "		47	1112					
" "	" "		69	562					
" "	" "		94	1970					
" "	" "		97	800					
" "	" "		99	30					
" "	" "		106	1246					
Sept 30	" "		91	54					
" "	" "		119	54					
Oct 31	" "		77	340					
" "	" "		84	281					
" "	" "		94	1988					
" "	" "		100	1428					
" "	" "		122	2019					
Nov 30	" "		116	50					
" "	" "		79	76					
" "	" "		148	4832					
Dec 31	" "		48	13000					
" "	" "		130	1016					
" "	" "		154	1154					
" "	" "		156	2292					
1916	" "		47	2389					
Jan 31	" "			2389					

Repairs etc. to Simplex Auto.
12611

1929			1930			1931			1932		
Jan 31	By George Howard	105	797.77	Jan 31	By George Howard	753.70			753.70		
Feb 28	"	131	1200	Oct 31	"	753.70			1200		
Mar 31	"	188	759	Dec 31	By Capital & Loss	1272.73			1272.73		
"	"	21	30.29								
"	"	22	28.74								
"	"	66	2.07								
"	"	67	9.05								
"	"	83	39.11								
"	"	80	190.91								
"	"	89	279								
"	"	92	99								
"	"	96	133								
"	"	106	889.99								
Apr 30	"	37	378								
"	"	66	18								
"	"	67	6.91								
"	"	74	230								
"	"	73	500								
"	"	71	50								
May 31	"	103	80.50								
"	"	103	25.2								
"	"	115	5.23								
June 30	"	90	193.29								
July 31	"	9	293.29								
Sept 30	"	66	10								
"	"	79	6550								
Oct 31	"	95	1272.73								
"	"	110	25								
"	"	113	250								
"	"	115	140.41								
Nov 30	"	109	140								
"	"	90	15.99								
Dec 31	"	126	15.99								
Jan 31	By George Howard	188	460								
Feb 28	"	87	62.04								
"	"	87	149.03								
"	"	81	126.8								
"	"	85	31.8								
"	"	93	30								
"	"	107	86.46								
May 31	"	48	2.74								
"	"	50	2.11								
"	"	62	18								
"	"	68	260								
"	"	99	88								
"	"	101	3100								
"	"	132	3200								
"	"	135	40								
"	"	157	31.2								
"	"	156	32								
"	"	70	650.54								

245775

Repairs etc. to Simplex Auto.
12611

1930			1931			1932			1933		
June 30	By George Howard	14	120	Dec 31	By Capital & Loss	323			1172.79		
"	"	19	1100								
"	"	125	537								
"	"	143	574								
July 31	"	251	40.27								
"	"	93	11								
Sept 30	"	104	29.99								
"	"	93	11								
"	"	144	265								
"	"	192	1200								
"	"	200	400								
"	"	91	11.13								
Oct 31	"	93	120								
"	"	109	10.20								
"	"	127	11.13								
Nov 30	"	20	2500								
"	"	105	722								
Dec 31	"	212	294								
"	"	216	11.13								
Jan 31	By George Howard	27	1000								
"	"	83	120								
"	"	107	57.77								
"	"	20	24								
"	"	126	2.46								
Mar 31	"	107	30.2								
May 31	"	10	3.33								
"	"	112	10.10								
"	"	114	207								
"	"	122	300								
"	"	125	100.4								
June 31	"	11	51.64								
"	"	100	27.4								

Sheet No. _____

Name _____

Address _____

Sheet No. 42

Name _____

Address _____

Rectifiers
You Ending Feb 1913

* 2910

1912			1912						
Mar 30	2	Uncher	70	Mar 30	ap 30 E. S. S. S.	554	12053		
" "	"	"	127	11983	ap 30	"	554	12053	
apl 30	"	"	108	500	51	"	5734	554	
" "	"	"	142	349	July 31	"	6071	6358	
May 31	"	"	6	78	July 31	"	6219	6358	
" "	"	"	48	1579	ap 30	"	6366	6358	
" "	"	"	60	81	July 31	"	6504	6358	
" "	"	"	88	51	"	"	7113	6358	
" "	"	"	97	240	"	"		6358	
" "	"	"	99	10	"	"		6358	
" "	"	"	102	765	"	"		6358	
" "	"	"	105	671	"	"		6358	
" "	"	"	121	244	"	"		6358	
" "	"	"	138	50	"	"		6358	
" "	"	"	140	1797	"	"		6358	
June 30	"	"	9	53	"	"		6358	
" "	"	"	24	05	"	"		6358	
" "	"	"	91	96	"	"		6358	
" "	"	"	98	310	"	"		6358	
" "	"	"	109	561	"	"		6358	
" "	"	"	124	356	"	"		6358	
" "	"	"	133	475	"	"		6358	
" "	"	"	143	40	"	"		6358	
" "	"	"	145	410	"	"		6358	
July 31	"	"	20	270	"	"		6358	
" "	"	"	22	274	"	"		6358	
" "	"	"	141	120	"	"		6358	
" "	"	"	142	245	"	"		6358	
Aug 31	"	"	129	295	"	"		6358	
Sept 30	"	"	121	391	"	"		6358	
Oct 31	"	"	39	210	"	"		6358	
Nov 30	"	"	42	150	"	"		6358	
Dec 31	"	"	79	118	"	"		6358	
Jan 31	"	"	116	465	"	"		6358	
Feb 28	"	"	66	27	"	"		6358	
Mar 31	"	"	116	465	"	"		6358	
Apr 30	"	"	66	27	"	"		6358	
May 31	"	"	116	465	"	"		6358	
Jun 30	"	"	66	27	"	"		6358	
Jul 31	"	"	116	465	"	"		6358	
Aug 31	"	"	66	27	"	"		6358	
Sept 30	"	"	116	465	"	"		6358	
Oct 31	"	"	66	27	"	"		6358	
Nov 30	"	"	116	465	"	"		6358	
Dec 31	"	"	66	27	"	"		6358	

Sheet No. _____

Name _____

Address _____

Sheet No. 43

Name _____

Address _____

Records (Cylinder) \$ 291.4
Year Ending Feb. 28, 1913

1912			1912			1912		
Mar 30	To Voucher	127	78.44	Mar 30	By J. A. E. Inc. 2nd	557	78.44	
Apr 30	" "	108	90	Apr 30	" " "	579	41.40	
" "	" "	145	40.50	June 29	" " "	6074	153.74	
June 29	" "	83	25.74	July 31	" " "	8221	48.65	
July 31	" "	142	4.55	Sept 30	" " "	8507	25.00	
" "	" "	73	17.04	Oct 31	" " "	6613	25.00	
Sept 30	" "	54	7.3	Nov 30	" " "	6541	23.56	
" "	" "	118	2.5	Dec 31	" " "	684	1.12	
" "	" "	121	24.61	Jan 31	" " "	7117	1.12	
Oct 31	" "	129	29.43	Feb 28	" " "		2.02	
Nov 30	" "	30	25					
" "	" "	23	50					
Dec 30	" "	124	23.41					
		38	60					
		16	76					
		49	80					
1913		158	3.15					
Jan 31	To Voucher	104	7.0					
" "	" "	152	20					
" "	" "	155	94					
July 28	" "	124	128.68					
			129.140					129.140
Mar 31	To Voucher	120	135.3	Mar 31	By J. A. E. Inc. 2nd	7163	135.3	
Apr 30	" "	120	1.42	Apr 30	" " "	7389	65	
May 31	" "	108	1550	May 31	" " "	9510	68.46	
" "	" "	127	30	June 30	" " "	9666	187.40	
June 30	" "	142	44.6	July 31	" " "	7779	26.77	
July 31	" "	120	52.73	Aug 31	" " "	7903	59.66	
" "	" "	43	32	Sept 30	" " "	1015	22.39	
Aug 31	" "	129	26.48	Oct 31	" " "	8130	35.44	
Sept 30	" "	116	57.66	Nov 30	" " "	8252	16.16	
" "	" "	1	13.44	Dec 31	" " "	8391	39.25	
" "	" "	38	122	Jan 31	" " "	8458	18.44	
" "	" "	109	23.84	Feb 28	" " "	8525	18.42	
Oct 31	" "	154	28.42	Mar 31	" " "	8641	23	
Nov 30	" "	100	174	Mar 31	" " "	8693	253.56	
Dec 31	" "	144	167.41	Apr 30	" " "	8779	31.54	
" "	" "	2	11.14				353.98	
" "	" "	55	30					
" "	" "	127	150					
" "	" "	154	41.2					
" "	" "	156	183.70					
1914	" "	160	77.7					
Jan 31	" "	108	74.2					
May 28	" "	127	159.00					
" "	" "	30	33					
" "	" "	112	23					
" "	" "	134	181.79					
Mar 31	" "	82	520					
" "	" "	92	62					
" "	" "	106	252.69					
Apr 30	" "	4	220					
			10.83					

Records (Cylinders) 1891

1891

Up. 3rd St. Hayward
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Records (Cylinders) 1891

Sept 30

Cylinder

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Sept 30

Cylinder

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Address

Sheet No. _____

Name
Address

Repairs & Supplies to Automobiles 4352

27. 1500

44

1924		1925	
Aug 30	Transf. July Lawson	179	207462
		74	170
		90	207463
Sept 30	"	70	207464
	"	95	207465
Oct 31	"	15	207466
	"	115	207467
Nov 30	"	109	207468
Dec 31	"	150	207469
Jan 31	"	138	207470
Feb 28	"	147	207471
Mar 31	"	171	207472
			207473
			207474
			207475
			207476
			207477
			207478
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			207498
			207499
			207500

Sheet No.

Name
Address

Sheet No.

Name
AddressRepairs & Supplies for Ford Auto.
1918

1917		1918	
Apr. 30	London	252	10.12
May 31	"	293	5.59
June 30	"	251	9.18
July 31	"	256	8.21
Aug. 31	"	221	13.14
Sept. 30	"	200	16.72
Oct. 31	"	177	14.58
Nov. 30	"	212	17.60
Dec. 31	"	226	14.46
Jan. 31	"	181	23.14
Feb. 29	"	176	21.22
Mar. 31	"	119	20.93
Apr. 30	"	92	21.57
May 31	"	135	22.85
June 30	"	9	200
July 31	"	101	201.50
		1.32	1.77
			10.12
			5.59
			9.18
			8.21
			13.14
			16.72
			14.58
			17.60
			14.46
			23.14
			21.22
			20.93
			21.57
			22.85
			200
			201.50
			1.77
			10.12
			5.59
			9.18
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			13.14
			16.72
			14.58
			17.60
			14.46
			23.14
			21.22
			20.93
			21.57
			22.85
			200
			201.50
			1.77

Name _____
Address _____

Name _____
Address _____

Repairs & Supplies for Ford Auto. 3901

1872		1873	
Mar 31	Longhorn	202	213 Apr. 30
May 31	"	48	1605
"	"	551	1605
June 30	"	551	1605
July 31	"	156	1605
Aug 31	"	37	1605
Oct 31	"	751	1605
Nov 30	"	175	1605
"	"	181	1605
"	"	200	1605
Oct 31	"	37	1605
Nov 30	"	177	1605
Dec 31	"	275	1605
Jan 31	"	226	1605
Feb 31	"	185	1605
Mar 31	"	136	1605
Apr 30	"	119	1605
May 31	"	51	1605
"	"	135	1605
June 30	"	101	1605
July 31	"	125	1605

Name _____
Address _____

Name...
Address...

Recital & Demonstration Work

147

June 30	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000
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Sheet No.

Name

Address

Sheet No.

Name

Address

Repaired & replacement of Machinery & tools (Chand Dwar)
1398

Sept 30	Carroll	200	378	Sept 30	St. Edwin Church	200	378
Oct 31	"	511	1166	Oct 31	"	1068	2529
"	"	70	60	Nov 30	"	1066	3721
"	"	40	696	Jan 30	"	1070	4814
"	"	17	559	May 31	"	1075	6089
Nov 30	"	130	793	May 29	"	1081	7408
"	"	1	80	May 31	"	1183	8685
"	"	211	80	June 30	"	1182	9761
"	"	217	6213				
Dec 31	"	80	378				
"	"	220	11				
"	"	226	5719				
Jan 31	"	39	22				
"	"	41	396				
"	"	50	25				
"	"	100	308				
"	"	124	722				
"	"	180	524				
"	"	118	8612				
Feb 29	"	30	121				
"	"	53	6509				
"	"	84	122				
"	"	107	412				
"	"	126	17191				
Mar 31	"	119	4325				
June 30	"	161	81				

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Reparations Bureau, New York
44115

1941
Mar 10
Apr 30
May 31

Insurance
" "
" "

119
92
185

1941
Mar 31
Apr 30
May 31

1115
1116
1121

1523
2193
1175

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Repaired & Supplied Ford Buick Auto

141246

1974

Mar 31	Donation	86	902
Apr 30	"	119	1705
May 31	"	100	1805
Jun 30	"	125	1930
Jul 31	"	76	2006
Aug 31	"	108	2114
Sep 30	"	96	2210
Oct 31	"	125	2335
Nov 30	"	76	2411
Dec 31	"	100	2511

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Edward L. Lippincott, Sec. Soc. Ind.
RUEL 78

1916				1917			
Mar. 21	Leander	119		Mar. 31	Williamson	111623	157
Mar. 30	"	121		Mar. 31	"	111624	161
May 31	"	122		May 31	"	111625	171
June 30	"	123		June 30	"	111626	172
July 31	"	124		July 31	"	111627	173

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____

Repairs & Supplies *to* *Edison Ford Truck*
11166

1916

<i>Apr 30 Voucher</i>	67	7.50	<i>Apr 29</i>	<i>E. S. Ford, Inc.</i>	<i>111701</i>	<i>17.49</i>
	94	3.90	<i>May 31</i>	"	"	<i>13.65</i>
<i>May 31</i>	131	13.50	<i>June 30</i>	"	"	<i>36.92</i>
<i>June 30</i>	36	10.30	<i>July 31</i>	"	"	<i>18.81</i>
	76	6.80				
	121	12.00				
<i>July 31</i>	137	4.17				

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____

Repair Station

13313

50

1913

Mar 31 To Lumber 120

1913

Mar 31 By S.S. Lumber 120

561

1913

Repairs & Supplies for Electric Taps

13313

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

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Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

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Mar 31 By S.S. Lumber 120

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Mar 31 By S.S. Lumber 120

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Apr 30 To Lumber 87

July 31 By Lumber 120

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Mar 31 By S.S. Lumber 120

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Mar 31 By S.S. Lumber 120

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Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Apr 30 To Lumber 87

July 31 By Lumber 120

202

Mar 31 By S.S. Lumber 120

26713

Mar 31 By S.S. Lumber 120

127

Sheet No.

Name

Address

Bresit & Co. Insurance

13320

1912	1913	1913	1913
Apr 30 To Lumber 110	115	Apr 30 By S.S. Co. Ins. 938	450
May 31 " " 114	350	May 31 " " 7520	3500

Repairs to S. & S. Reduction Piston Hoops

1912	1913	1913	1913
Apr 30 To Lumber 110	315	Apr 30 By S.S. Co. Ins. 7111	315
May 31 " " 114	634	May 31 " " 7530	634
June 30 " " 120	1655	June 30 " " S.S. Co. Ins. 7679	1655
July 31 " " 116	2573	July 31 " " 7722	2573
Sept 30 " " 109	1961	Sept 30 " " 8035	1961
Oct 31 " " 114	1100	Oct 31 " " 8146	1100
Nov 30 " " 100	1496	Nov 30 " " 8219	1496
Dec 31 " " 127	2673	Dec 31 " " 8209	1493
Jan 31 " " 106	6794	Jan 31 " " 8216	1493
Feb 31 " " 116	2257	Feb 31 " " 8216	2257
Mar 31 " " 115	1556	Mar 31 " " 8216	2257
Apr 30 " " 106	3233	Apr 30 " " 8216	2257
May 31 " " 90	516	May 31 " " 8216	2257
June 30 " " 95	7923	June 30 " " 8216	2257
July 31 " " 115	2126	July 31 " " 8216	2257
Aug 31 " " 107	2607	Aug 31 " " 8216	2257
Sept 31 " " 117	964	Sept 31 " " 8216	2257
Oct 31 " " 171	762	Oct 31 " " 8216	2257
Nov 30 " " 252	1313	Nov 30 " " 8216	2257
Dec 31 " " 251	1094	Dec 31 " " 8216	2257
Jan 31 " " 256	1151	Jan 31 " " 8216	2257
Feb 31 " " 241	1033	Feb 31 " " 8216	2257
Mar 31 " " 112	5153	Mar 31 " " 8216	2257
Apr 30 " " 126	750	Apr 30 " " 8216	2257

Sheet No.

Name

Address

Repair Patterns for Welding Hoopage

13323

1912	1913	1913	1913
May 31 To Lumber 115	128	May 31 By S.S. Co. Ins. 7111	450
June 30 " " 128	249	June 30 " " 7609	249

Repair Patterns on Iron Loading Machine

1912	1913	1913	1913
May 31 To Lumber 114	110	May 31 By S.S. Co. Ins. 7111	450
June 30 " " 128	06	June 30 " " 7613	06

Sheet No. _____

Name _____
Address _____

Repair Deck #3357

1913	1914	1915	1916
June 30. To Transfer 125.	June 30. By Ed B. B. 7617	7996	354
July 31. " " 129.	July 31. " " " 7762	354	

1913	1914	1915	1916
June 30. To Transfer 125.	June 30. By Ed B. B. 7617	7996	354
July 31. " " 129.	July 31. " " " 7762	354	

Repair Sallies #3396

Sheet No. _____

Name _____
Address _____

Repair One Rectifier Exhibit Table #3391

1913	1914	1915	1916
June 31. Transfer 127.	June 31. By Ed B. B. 7617	7996	354
July 31. " " 129.	July 31. " " " 7762	354	

1913	1914	1915	1916
June 31. Transfer 127.	June 31. By Ed B. B. 7617	7996	354
July 31. " " 129.	July 31. " " " 7762	354	

Repairs or make on each of the #1-2-3-4-5

Repair Lie #3876

ONE STAR ENGINE, 100 MARKET ST., NEWARK, N. J.

1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407

Repair! Call in...

Sept 30 Transfer 1000.00 -- 1396

1915

Repairs and Supplies for Ford Bus 3500

Apr. 30	Washer	WV	926	Apr. 30	3 ⁴ King	998	926
May 31	"	843	1311	May 31	"	1008	1311
June 30	"	851	847	June 30	"	1017	847

Sheet No.

Name _____
Address _____

H. J. P. and P. J. P.

THE GREEN PAPER, 175 MARKET ST., BOSTON, N. A.

1891		1892		1893		1894	
Dec. 30	11	11	11	11	11	11	11
Dec. 31	11	11	11	11	11	11	11
Jan. 1	11	11	11	11	11	11	11
Jan. 31	11	11	11	11	11	11	11
Feb. 29	11	11	11	11	11	11	11
Mar. 31	11	11	11	11	11	11	11
Apr. 30	11	11	11	11	11	11	11
May 31	11	11	11	11	11	11	11
June 30	11	11	11	11	11	11	11
July 31	11	11	11	11	11	11	11
Aug. 31	11	11	11	11	11	11	11
Sept. 30	11	11	11	11	11	11	11
Oct. 31	11	11	11	11	11	11	11
Nov. 30	11	11	11	11	11	11	11
Dec. 31	11	11	11	11	11	11	11

Reconstruct Edward Weston Picture of general

1905		1906		1907	
Dec. 31	126.31	126.31	126.31	126.31	126.31
Dec. 31	126.31	126.31	126.31	126.31	126.31
Dec. 31	126.31	126.31	126.31	126.31	126.31
Dec. 31	126.31	126.31	126.31	126.31	126.31
Dec. 31	126.31	126.31	126.31	126.31	126.31

Sheet No. _____

Name
AddressRepairs to Alberger's Pump
1894

1894		1895	
July 29. Luncher	176	July 29. Edwin Schenck's 1894	377
Jan 30. "	91	Jan 29. " " " 11 1893	500
May 31. "	125	May 31. " " " 11 1890	509

1894		1895	
July 29. Luncher	176	July 29. Edwin Schenck's 1894	377

Sheet No. _____

Name
AddressRepairs to 'Machinist's' Dock Head Rigging
1894

1894		1895	
Nov 30. Luncher	20	Nov 30. Edw Schenck's 1894	13720
" "	103	Jan 31. " " 1894	67160
" "	107	Jan 31. " " 1897	67160
Dec 20. "	212		
" "	5		
" "	17		
" "	27		
" "	26		
" "	27		
" "	111		
" "	112		
" "	131		
" "	132		
" "	111		
" "	121		
" "	200		
" "	200		
" "	200		
Jan 21. "	14		
" "	29		
" "	5		
" "	58		
" "	188		
" "	188		

1894		1895	
Jan 31. Luncher	31	Jan 31. Schenck's 1894	25979
" "	86	Feb 29. " " 1892	92
" "	90		
" "	100		
" "	100		
Feb 29. "	30		

Name
Address

Name *Repair & Maint. Fiber Pin-in-6 Wiring Cards*
Address *# 4859.*

July 31. Voucher 135	135 July 31. Div. Rec. May 27. 11750	135
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Repair & Return Three Capping Machines
#11295

July 31. Vacher 121	11:20	July 31. McC. Inc. R.R. 47, Div 17425	11:20
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Sheet No

Name _____
Address _____

Sheet No. _____
Name Repair & Return One Green Pennings
Address # 4296

July 31	Weather 132	7th July 31 245 Lm. Lin. 112 L. 117 W. 9	7th
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Repair Jim on Microcapi

July 31	1916	Vanished	132	July 31	1916	Richmond	11753	115
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Sheet No.

Name

Address

Repair Warm Drive for Farm Table

1231

July 31 Voucher	102	1135 Jan 31	11178	1135
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Repaid & Refused Landed & By Bus Check

July 31 Voucher	102	1135 Jan 31	11178	1135
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Sheet No. 102

Name

Address

Repair Steam Pump # 2253

1911	1911	1911	1911	
Feb 28 To Voucher	102	6.32	Feb 28 By E. L. W. L. 3444	1918
103	12.63	Mar 31	" " " 3613	2648
104	2.3			1118
116	1.65			
117	1.65			
118	1.65			
119	1.65			
120	1.65			
121	1.65			
122	1.65			
123	1.65			
124	1.65			
125	1.65			
126	1.65			
127	1.65			
128	1.65			
129	1.65			
130	1.65			
131	1.65			
132	1.65			
133	1.65			
134	1.65			
135	1.65			
136	1.65			
137	1.65			
138	1.65			
139	1.65			
140	1.65			
141	1.65			
142	1.65			
143	1.65			
144	1.65			
145	1.65			
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Sheet No. 103Name
Address

Repairing Sprockets # 2326

1911		1911	
Mar. 31 To Voucher	117	563	Mar. 31 By A.B.C. Co. 2326
" " " "	118	281	
" " " "		543	
		543	

Repairing Pattens # 296 + # 1618 # 2365

1911		1911		
apl 20 To Voucher	113	69	apl 30 By Estler, Inc 3839	207
" " " "	114	113		
		207		207

Repair Pattens for Grinding & Grinding Machines # 2381

1911			1911	
Apr. 30 To Voucher	113	543	Apr. 30 By E.B.C. Co. 2381	1628
" " " "	114	1085	May 31 " " " 4023	718
May 31 " " "	115	1085		1846
" " " "	116	73		
		1846		1846

Sheet No. 112Name
Address

Making Rong & Pattern # 3112

1912				1912			
Oct 31	To Voucher	119	275	Oct 31	By E.B.C. Co. 3112	245	275

Rong & Pattern # 3128

1912		1912	
Oct 31 To Voucher	119	Oct 31 By E.B.C. Co	119

Rong & Pattern # 3131

1912				1912			
Oct 31	To Voucher	119	119	Oct 31	By E.B.C. Co. Inv.	119	119

Sheet No. _____

Name _____

Address _____

Rabbit Insulators #3194

1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724

Repair Patterns #3189

1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724

Rough Patterns #3195

1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724

Sheet No. _____

Name _____

Address _____

Rabbit out Hearing #3198

1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724

Rough Patterns #3200

1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724

Rabbit Dressing Preparation #3205

1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724
1719	1720	1721	1722	1723	1724

Sheet No. _____

Name
Address

Rough Pattern #3217

1913	Jan 31 To Lumber	100	1913	Jan 31 To Lumber	100

Rough Pattern #3215

1913	Jan 31 To Lumber	100	1913	Jan 31 To Lumber	100

Rough Pattern #3226

1913	Jan 31 To Lumber	100	1913	Jan 31 To Lumber	100

Sheet No. _____

Name
Address

Rough Pattern #3241

1913	Jan 31 To Lumber	100	1913	Jan 31 To Lumber	100

Rough Pattern #3247

1913	Jan 31 To Lumber	100	1913	Jan 31 To Lumber	100

Roll Down Copper Strip #3255

1913	Jan 31 To Lumber	100	1913	Jan 31 To Lumber	100

Sheet No. _____

Name _____
Address _____

Rough Patterns

#3258

1913	July 26	To Lumber	120	1913	July 26	By S.S. B. Co. Lm	7250	608
1913	Mar 31	To Lumber	120	1913	Mar 31	By S.S. B. Co. Lm	7225	3954

Rough Patterns

#3291

1913	Mar 31	To Lumber	120	1913	Mar 31	By S.S. B. Co. Lm	7225	3954
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Rough Patterns

#3261

1913	July 26	To Lumber	120	1913	July 26	By S.S. B. Co. Lm	7250	7200
1913	Mar 31	To Lumber	120	1913	Mar 31	By S.S. B. Co. Lm	7235	12894

Rough Patterns

#3286

1913	Mar 31	To Lumber	120	1913	Mar 31	By S.S. B. Co. Lm	7235	12894
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Repair Patterns

#3285

1913	Mar 31	To Lumber	120	1913	Mar 31	By S.S. B. Co. Lm	7235	7741
"	"	"	"	"	"	"	"	"

Sheet No. _____

Name _____
Address _____

Rough Patterns

#3389

1913	June 30	To Lumber	178	1913	June 30	By S.S. B. Co. Lm	7617	1171
------	---------	-----------	-----	------	---------	-------------------	------	------

Rough Patterns

#3390

1913	June 30	To Lumber	178	1913	June 30	By S.S. B. Co. Lm	7617	1171
------	---------	-----------	-----	------	---------	-------------------	------	------

Rough Patterns

#3391

1913	June 30	To Lumber	178	1913	June 30	By S.S. B. Co. Lm	7617	250
1913	July 31	"	"	1913	July 31	"	"	53

121

Sheet No. _____

Name _____

Address _____

Rough & Pattern #3400

1912

June 30	To Banker	125	369	June 30 By E. J. Ross 764	369
July 31	"				

Sheet No. _____

Name _____

Address _____

Rough & Pattern #3427

122

1912

July 31	To Banker	72	2972	July 31 By E. J. Ross 764	7193
Aug 31	"	116	422	" " " 776	2580
			2580		

1913

Rough & Pattern #3401

June 30	To Banker	100	00	June 30 By E. J. Ross 764	00
July 31	"	109	210	July 31 " " " 776	210

1913

Rough & Pattern #3416

July 31	To Banker	109	190	July 31 By E. J. Ross 764	190
---------	-----------	-----	-----	---------------------------	-----

1913

E. J. Ross L. M.

June 30	To Banker	100	07	June 30 By E. J. Ross 7700	07
July 31	"	150	50	July 31 " " " 776	50

1913

Rough & Pattern #3417

July 31	To Banker	129	230	July 31 By E. J. Ross 776	230
---------	-----------	-----	-----	---------------------------	-----

Sheet No. _____

Name
Address

Rough & Tattum #3120

1913	July 31	To Lumber	129	1913	July 31	By E. S. B. Co. Inc. 7764	283
------	---------	-----------	-----	------	---------	---------------------------	-----

1913	July 31	To Lumber	129	1913	July 31	By E. S. B. Co. Inc. 7763	120
July 31	"	"	116	2013	July 31	" " " 7763	221

1913	July 31	To Lumber	129	1913	July 31	By E. S. B. Co. Inc. 7764	1025
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Sheet No. _____

Name
Address

Rough & Tattum #3129

1913	July 31	To Lumber	129	1913	July 31	By E. S. B. Co. Inc. 7764	384
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1913	July 31	To Lumber	129	1913	July 31	By E. S. B. Co. Inc. 7764	125
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1913	July 31	To Lumber	129	1913	July 31	By E. S. B. Co. Inc. 7764	532
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Sheet No. _____

Name
AddressLong L. Patterson
#34642

1912
July 31 To Lumber 109 541 July 31 By S.S.B. on Inv 7916 541

1912

Necessary Repairs to Oiler & Lifting Machinery
#34641

July 31 To Lumber 109 99
3028 July 31 To S.S.B. on Inv 7916 99
3028

1912

Long L. Patterson
#34642

Aug 31 To Lumber 116 177 Aug 31 By S.S.B. on Inv 7919 177

Sheet No. _____

Name
AddressLong L. Patterson
#34640

1912
Aug 31 To Lumber 116 185 Aug 31 By S.S.B. on Inv 7919 185

1912

Long L. Patterson
#34641

Aug 31 To Lumber 116 924 Aug 31 By S.S.B. on Inv 7919 924

1912

Long L. Patterson
#34642

Aug 31 To Lumber 116 1246 Aug 31 By S.S.B. on Inv 7919 1246

Sheet No. _____
Name _____
Address _____

Repair One Powder Sifter #3445

1913
Sept 31 To Lumber 116 1050
Sept 30 " " 109 3123
By J. B. Miller 7990 1050
" " " " 8099 3123

1913
Sept 30 To Lumber 109 759
By E. B. Miller 7990 759

1913
Sept 30 To Lumber 109 152
Oct 31 " " 122 16
By W. B. Miller 1006 152
" " " " 8162 16

Sheet No. _____
Name _____
Address _____

Repair 2 Sifters #3485

1913
Sept 30 To Lumber 109 221
By E. B. Miller 7990 221

1913
Sept 30 To Lumber 109 1441
Oct 31 " " 122 2453
By E. B. Miller 7990 1441
" " " " 8162 2453

1913
Sept 30 To Lumber 109 125
By E. B. Miller 7990 125

Sheet No. _____

Name
AddressRough & Patton
#3547

1912	Nov	30	To Lumber	144	141	Nov 30	By E.S.B. Co. Inv	8228	141
------	-----	----	-----------	-----	-----	--------	-------------------	------	-----

1913	Nov	30	To Lumber	144	973	Nov 30	By E.S.B. Co. Inv	8228	973
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1913	Nov	30	To Lumber	144	853	Nov 30	By E.S.B. Co. Inv	8228	853
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Sheet No. _____

Name
AddressRough & Patton
#3542

1912	Nov	30	To Lumber	144	707	Nov 30	By E.S.B. Co. Inv	8227	707
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1913	Nov	30	To Lumber	144	400	Nov 30	By E.S.B. Co. Inv	8226	400
------	-----	----	-----------	-----	-----	--------	-------------------	------	-----

1913	Nov	30	To Lumber	144	05	Nov 30	By E.S.B. Co. Inv	8229	05
	Dec	31	"	156	540	Dec 31	"	8245	540

Sheet No. _____

Name _____

Address _____

Repair Lab. Tattler 1995²
#3595

1913	1914	1915	1916	1917	1918
Dec 31	Jan 31	Feb 28	Mar 31	Apr 30	May 31
106	107	108	109	110	111

1913	1914	1915	1916	1917	1918
Dec 31	Jan 31	Feb 28	Mar 31	Apr 30	May 31
106	107	108	109	110	111

1913	1914	1915	1916	1917	1918
Dec 31	Jan 31	Feb 28	Mar 31	Apr 30	May 31
106	107	108	109	110	111

Sheet No. _____

Name _____

Address _____

Resistance Compensating Units
#3995

1913	1914	1915	1916	1917	1918
Dec 31	Jan 31	Feb 28	Mar 31	Apr 30	May 31
106	107	108	109	110	111

1913	1914	1915	1916	1917	1918
Dec 31	Jan 31	Feb 28	Mar 31	Apr 30	May 31
106	107	108	109	110	111

1913	1914	1915	1916	1917	1918
Dec 31	Jan 31	Feb 28	Mar 31	Apr 30	May 31
106	107	108	109	110	111

Sheet No. _____

Name
AddressRepair & Repair Machinery in Bldg #22 & 711
#3865

1915		1916		1917		1918	
Mar 31	London	1	1663	Mar 31	Sw. 2 B. Sw.	9795	132482
"	"	5	496	Apr 30	"	8191	53981
"	"	17	661	May 31	"	10015	5963
"	"	21	376	Aug 31	"	10341	17100
"	"	26	95				
"	"	36	605				
"	"	37	1336				
"	"	46	731				
"	"	60	350				
"	"	73	409				
"	"	75	2718				
"	"	77	150				
"	"	119	143				
"	"	153	161				
"	"	171	171				
"	"	175	175				
"	"	176	176				
"	"	177	177				
1916		1917		1918		1919	
May 31	"	178	178				
1917		1918		1919		1920	
Mar 31	London	86	1800	Mar 31	By S.B. Sw. 9114	1000	
"	"	77	10				

Repair & Return to Farm Totals

1915		1916		1917		1918	
Mar 31	London	171	1050	Mar 31	By S.B. Sw. 9114	1000	
Apr 30	"	21	15	Apr 30	"	9938	354
"	"	24	337	May 31	"	10058	717
May 31	"	293	787				

Repair - See for Stamping & Co. Inc.

Sheet No. _____

Name
AddressRecord Recording Services Plus Ambert
#3874

1915		1916		1917		1918	
Apr 30	London	250	5031	Apr 30	By S.B. Sw. 9114	1000	5031
May 31	"	155	70	May 31	"	10057	2123
		173	7053				
1916		1917		1918		1919	
May 31	"	273	368	May 31	By S.B. Sw. 9114	1000	368

Repair - See for Stamping & Co. Inc.

1915		1916		1917		1918	
June 30	London	312	660	June 30	By S.B. Sw. 9114	1000	990
	"	63	225				
	"	179	25				
	"	371	78				

Rack Hooks

Sheet No.

Name

Address

Repair (Blindstamped) Cuts
#11170

1916	71 May 31	Voucher	135	1916	17 May 31	P.B. H. P. Co.	21	1143	1791
------	-----------	---------	-----	------	-----------	----------------	----	------	------

Red Pop Sprinklers #11173

1916	71 May 31	Voucher	87	1916	72 May 31	P.B. H. P. Co.	21	1144	72
1916	June 30		101	1916	June 30			1144	1143

Repair (Blindstamped) Vacuum Matted Holed

1916	June 30	Voucher	107	1916	73 June 30	P.B. H. P. Co.	21	1145	76
1916	July 31		132	1916	July 31			1145	816

Sheet No.

Name

Address

Repair to (Blindstamped) Mill Grinder
#11175

1916	June 30	Voucher	107	1916	31 June 30	P.B. H. P. Co.	21	1146	363
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Repair Hydraulic Valves #11177

1916	June 30	Voucher	107	1916	31 June 30	P.B. H. P. Co.	21	1147	360
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Repair two Vacuum Matted Holed

1916	June 30	Voucher	107	1916	31 June 30	P.B. H. P. Co.	21	1148	815
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Sheet No.

Name

Address

Reducing Packing of Diesel Pans

H.V.17

June 30	Voucher	108	7915	June 30	W.E.H. Co. Inc.	11476	1016
---------	---------	-----	------	---------	-----------------	-------	------

Repair to Diesel Record Mounting Mach.

June 30	Voucher	108	605	June 30	J.H.E. Co.	11117	605
July 31	"	132	1418	July 31	"	11707	1418

Repair to Diesel for Supercharger

July 31	Voucher	11	1550
"	"	44	1625
"	"	132	1707

Sheet No.

Name

Address

Repair to Diesel for Diesel Pumping Car

H.V.18

July 31	Voucher	44	125
"	"	132	1674

Repair to Diesel for Packing Powder in Mould

July 31	Voucher	60	1550	July 31	J.H.E. Co.	11117	1550
"	"	82	1674	"	"	11707	1674
"	"	132	1707	"	"	11707	1707
"	"	61	1707	"	"	11707	1707

Sheet No.

Name

Address

Repair Jeering Machine for Manned

H. 2. 8. 2

July 31, 1917 125 100 July 31, 1917 11732 640

Repair Laboratory Balance

H. 2. 8. 2

July 31, 1917 125 100 July 31, 1917 11732 640

Standard Oil Co 100 Special Cells for Navy #2499 Solution #1 115
 Lubricant Material for Submarine Cells #2499 Solution #1 135.10
 Speakers for 200 Separating Plates #2499 Solution #1 355.70
 thread Records #2014 Shaft #2499 Special Cells 116
 Special Photo for 2 Submarine Cells #2499 Solution #1 117
 Camera Experiments #2026 117
 Stereoscopic Photos #2026 117
 Small P. C. #2499 Solution #1 117
 Labor & Mat'l for 100 Shipley Coat #2499 105 117
 Six Feed Meters 4 Springs (2) #2499 117
 for Welding Mach. #2032 117
 Spinning Machine #2045 117
 for Motor Records #2045 117
 Secord Tube Storage 6 Steel Support #2499 117
 Binding Machines #2090 117
 Substitute for Rubber 7 Shaving Machines #2499 117
 top in Battery Bank #2117 117
 Smith R. J. #2117 117
 Labor & Mat'l for 100 Steel Wrenches #2499 117
 Shaving Machine #2130 117
 Mobile "B" #2130 117
 Soda Binding Machine #2130 117
 Opening Shating #2130 117
 Six Alarming #2130 117
 Storage Battery Cell #2130 117
 31 1/2 x 2 1/2 #2130 117
 Sketches of #2130 117
 Freight Car #2130 117
 Supply to #2130 117
 Schurink for #2130 117
 2 x 7 m for #2130 117
 Shipping Machine #2130 117
 Shaving Machine for #2130 117
 Six Battery Meters #2130 117
 Submarine Cell #2130 117
 Salliman A. #2130 117
 Storage Battery Cells #2130 117
 for Nighting #2130 117
 Set of Camp #2130 117
 Special Tools #2130 117
 Labor & Mat'l for #2130 117
 Submarine Cell #2130 117
 Sheet Iron Discs #2130 117
 Springs (7) #2130 117
 Shield to store #2130 117

Sheet No. 22

Name
Address

Shaving Machines
Year Ending Feb 28-1913

2912

1912		1913		1914		1915		1916	
Mar 30	To Voucher	127	4604	Mar 30	By J. A. E. Inc	5085	4604		
Apr 30	"	126	28	Apr 30	"	5925	6150		
"	"	142	6150	May 31	"	5925	10150		
May 31	"	140	10150	June 30	"	6022	10752		
June 30	"	145	10752	July 31	"	6660	11412		
Oct 31	"	22	11111	Nov 30	"	6700	12082		
"	"	97	90	Dec 31	"	685	12767		
Nov 30	"	129	5838	July 28	"	1111	13878		
Dec 31	"	121	5030						
July 28	"	155	10111						
		1216	315						
			15706						
Sept 30	To Voucher	140	217	Sept 30	By J. A. E. Inc	5086	317		
Nov 30	"	127	4171	Jan 31	"	5456	11721		
Feb 28	"	134	260	Feb 28	"	5399	260		
Mar 31	"	106	570	Mar 31	"	5691	320		

Sheet No. _____

Name
Address

Sheet No. _____

Name
Address

Single Unit Receipt #0165

26

1952		1953		1954		
Apr 30	To Balance	37	800	Apr 30	By 208 Incubator	77362
" "	" "	46	"	May 31	" " "	73678
" "	" "	104	25	" 30	" " "	7515
" "	" "	139	81	" 30	" " "	7661
" "	" "	110	21	" 30	" " "	7773
May 31	" "	27	34340	" 30	" " "	7777
" "	" "	80	70	Sept 30	" " "	7777
" "	" "	96	600	Oct 31	" " "	8183
" "	" "	122	135	Nov 30	" " "	8226
" "	" "	183	610			8256
" "	" "	137	618			8473
" "	" "	115	30			
June 30	" "	3	41605			
" "	" "	29	730			
" "	" "	111	180			
" "	" "	118	113			
" "	" "	59	329			
" "	" "	74	232			
" "	" "	107	57			
" "	" "	111	35			
" "	" "	117	264			
" "	" "	125	73			
July 31	" "	6	61444			
" "	" "	21	138			
" "	" "	44	180			
" "	" "	73	213			
" "	" "	88	11			
" "	" "	101	190			
" "	" "	111	422			
" "	" "	117	820			
" "	" "	129	989			
Aug 30	" "	71	37662			
" "	" "	76	21			
" "	" "	77	600			
" "	" "	104	28			
" "	" "	116	113			
Sept 30	" "	3	39115			
" "	" "	18	250			
" "	" "	30	320			
" "	" "	72	222			
" "	" "	74	190			
" "	" "	92	10			
" "	" "	96	136			
" "	" "	108	60			
" "	" "	109	11			
Oct 31	" "	3	602244			
" "	" "	35	800			
" "	" "	36	150			
" "	" "	39	213			
" "	" "	89	1800			
" "	" "	121	304			
" "	" "	124	97			
Nov 30	" "	47	7565			
" "	" "	128	3126			
			413046			

Sheet No. _____

Name
Address

Single Unit Rectifier # 3165

Month	Day	Hour	Min	Sec	Temp	Humidity	Wind	Pressure	Barometer	Thermometer	Hygrometer	Barometer	Thermometer	Hygrometer
Nov	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Dec	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Jan	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Feb	28	77	11	10	11	10	11	10	11	10	11	10	11	10
Mar	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Apr	30	77	11	10	11	10	11	10	11	10	11	10	11	10
May	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Jun	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Jul	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Aug	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Sep	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Oct	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Nov	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Dec	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Jan	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Feb	28	77	11	10	11	10	11	10	11	10	11	10	11	10
Mar	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Apr	30	77	11	10	11	10	11	10	11	10	11	10	11	10
May	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Jun	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Jul	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Aug	30	77	11	10	11	10	11	10	11	10	11	10	11	10

Sheet No. _____

Name
Address

Single Unit Rectifier # 3165

Month	Day	Hour	Min	Sec	Temp	Humidity	Wind	Pressure	Barometer	Thermometer	Hygrometer	Barometer	Thermometer	Hygrometer
Aug	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Sep	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Oct	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Nov	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Dec	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Jan	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Feb	28	77	11	10	11	10	11	10	11	10	11	10	11	10
Mar	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Apr	30	77	11	10	11	10	11	10	11	10	11	10	11	10
May	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Jun	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Jul	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Aug	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Sep	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Oct	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Nov	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Dec	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Jan	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Feb	28	77	11	10	11	10	11	10	11	10	11	10	11	10
Mar	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Apr	30	77	11	10	11	10	11	10	11	10	11	10	11	10
May	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Jun	30	77	11	10	11	10	11	10	11	10	11	10	11	10
Jul	31	77	11	10	11	10	11	10	11	10	11	10	11	10
Aug	30	77	11	10	11	10	11	10	11	10	11	10	11	10

Sheet No. _____

Name
Address

Sheet No. _____

Name
AddressSulphurating bottles
13963

27

1901

Aug. 21

Calumet & Hecla

122

64790

Aug. 21

The S. S. Co.

10221

30.19

1902

Sept. 30

177

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1903

Oct. 31

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Nov. 30

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Jul. 31

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Sep. 30

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Nov. 30

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1941

Dec. 31

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Address

Address

Spherical Theatre N.Y.M.
4105

Apr 30	Voucher	36
May 31	"	40
June 30	"	50
July 31	"	112
		41

7510	Apr 29	P.B.E. Inc	Contract 11255
248	May 31	"	"
5661	June 30	"	"
5271	July 31	"	"
50210			

78	22
26	61
52	71
50	21

Sheet No. _____

Name _____
Address _____

Sheet No. _____

Name _____
Address _____

Sharpen & Curries New Knives

#3250

50

1913		1913		1913	
Sept 1	To Lumber	124	Sept 1	To Lumber	124
Oct 30	"	140	Oct 30	"	140
May 31	"	148	May 31	"	148

1913		1913		1913	
Mar 31	To Lumber	120	Mar 31	To Lumber	120
May 31	"	122	May 31	"	122
June 30	"	118	June 30	"	118

Sheet Steel & Tube Sales

#3244

50

Sheet No. _____

Name _____

Address _____

Sharpening Milling Cutters

3209

1913	1913	1913	1913
Apr 30 To Lumber	418	Apr 30 To S.B.C. In Dr. 7403	1369
" " " "	137	" " " "	"
" " " "	139	" " " "	"
" " " "	140	" " " "	"

1913 Solution Used for Sharpening Ball and Roller Cutters
 Apr 30 To Lumber 140

1913 225 Apr 30 To S.B.C. In Dr. 7403

225

Sheet No. _____

Name _____

Address _____

Roscoe Smith

1913	1913	1913	1913
May 31 To Lumber	140	1600 May 31 To S.B.C. In Dr. 7558	1600
" " " "	140	" " " "	90
" " " "	149	" " " "	170
" " " "	116	" " " "	655

1913 1913 Sharpening Milling Machine Cutters
 June 30 To Lumber 125

1913 1060 June 30 To S.B.C. In Dr. 7405

1060

Sheet No. _____

Name _____

Address _____

Spindletop Building Warehouse
No. 4

1904		55061	55064
Jan. 1	10	95	13070
Jan. 31	37	54	11968
Feb. 1	39	70	11968
Feb. 29	95	11968	11968
Mar. 1	197	11968	11968
Mar. 31	118	13115	11968
Apr. 1	126	1165	11968
Apr. 30	35	1165	11968

Chas. E. Plange, Jr.

1904		7914	7914
June 30	20	7914	7914
July 1	121	11968	11968

Sheet No. _____

Name _____

Address _____

The Countertrade for Rice Rec. Ponds Road
H. H. B. O. G.

1904		7914	7914
July 1	121	11968	11968
July 31	121	11968	11968

1904		7914	7914
Aug. 1	121	11968	11968
Aug. 31	121	11968	11968

Sheet No. _____

Name _____

Address _____

Sheet No. 110

Name _____

Address _____

J. E. Simpson Linn

1912 July 31 To Voucher 1912 July 31	134 124	1912 July 31 By Elton Linn 1912 July 31	6274 11797	86 24
-----------------------------------------------	------------	--------------------------------------------------	---------------	----------

6 1/2" x 10" Dia Steel Disks H 3102				
1912 Oct 31 To Voucher	119	1912 Oct 31 By Elton Linn	1110	210

Surface Plate H 3101				
1912 Oct 31 To Voucher	119	1912 Oct 31 By Elton Linn	1110	210

Name
Address

Shaving Machine Brush & Holder #3125

[illegible]

Sand Glasses #3135

1912				1912			
Oct	31	To Under	149	950	Oct	31	By R.D.B. Galloway
Dec	31	" "	155	1135	Dec	31	" " " "
				2085			6837
							11355
							2085

Solid Concrete Bldg #3142

1870	Nov	30	To Lumber	30	3026	July	25	By R. B. Bly	263	162246
			" "	58	4411					
			" "	63	100					
			" "	19	102845					
			" "	77	2010					
			" "	124	16007					
Dec	31		" "	16	2157					
Jan	31		" "	00	2174					
			" "	155	31					
July	28		" "	51	22					
					11246					
Mar	31	To Lumber	68	1104	Dec	31	By R. B. B	285	160	

Name _____
Address _____

Single Unit Rectifier #3165

1870	Dec 31	Lumber	46	208	Dec 31	W. B. Lawrence	1871	21730
	"	"	47	71	Nov 31	" "	1870	5496
1900	"	"	155	2145	July	" "	7125	26264
Jan 31	"	"	48	49				
	"	"	155	4707				
July 28	"	"	84	1853				
	"	"	91	168				
	"	"	124	22213				
				51290				53290
Mar 31	20 Lumber	84	150	Mar 31	By W. B. Lawrence	7269	212924	
"	"	57	57					
"	"	18	2675					
"	"	115	585					
"	"	120	2834					

Supplst & Machine Work #3770

1913		1913		1913		1913	
Jan 1	To Balance	115	300	Jan 31	By Balance & Wm. B. 7011	9998	
"	"	155	919	" 28	" " " " 7148	5788	
July 28	"	124	5056				
			15786				15786

Steel Annealing Pots. 13702

^{12/13} Jan/31	To Lumber	155	¹⁸⁷⁸ Jan/31	By Lumber	6908	5725
Mar/31	To Lumber	120	17/13	Mar/31	By ESS Co Inv	7235
						17/13

Sheet No. _____

Name _____
Address _____

Special Equip. for Kinesth. Records #32411

1913	June 31 To Chamber	120	1713	June 31 To Chamber	6999	12
July 28 "	124	1605	July 28 "	7129	1605	1620
		1620				

1213

Side Holding Machine for Raw Blank (Equipment) #3225

July 25 To Chamber	124	203	July 25 To Chamber	7024	203
Mar 31 To Chamber	120	117	Mar 31 To Chamber	7214	117

Straighten Two Screw Drives #3239

1913	July 28 To Chamber	124	1913	July 28 To Chamber	7124	125
------	--------------------	-----	------	--------------------	------	-----

Sheet No. _____

Name _____
Address _____

Solution for sticking ball and to steel powder blank #3399

1913	June 30 To Chamber	125	1913	June 30 To Chamber	7124	203
------	--------------------	-----	------	--------------------	------	-----

1913

Slightly as Sampled #3406

July 31 To Chamber	129	1465	July 31 To Chamber	7111	1465
--------------------	-----	------	--------------------	------	------

1913

Ten F. Snuff

Aug 31 To Chamber	123	2515	Aug 31 To Chamber	7127	2515
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Sheet No. _____
Name _____
Address _____

L. F. Spachol
L. F. M.

1911		1911		1911		1911	
July 28	Lumber	26	118	July 28	L. F. M. Lnr	86.5	118
"	"	"	"	"	"	"	"

1911		1911		1911		1911	
Mar 31	Lumber	106	25.89	Mar 31	By J. R. Edinboro	89.7	118.9
Sticks Resin & Greenup Ship #3622							

1911		1911		1911		1911	
Mar 31	Lumber	106	40.63	Mar 31	By J. R. Edinboro	30.7	40.63
Stairway from Second to 1st floor in Laboratory							

Sheet No. _____
Name _____
Address _____

Shaples & Anchor Bolts
#3655

1911		1911		1911		1911	
Apr 30	Lumber	116	17.57	Apr 30	Edinboro L. B. Lnr	88.13	17.57
May 31	"	115	"	May 31	"	88.76	118

1911		1911		1911		1911	
Apr 30	Lumber	116	7.65	Apr 30	Edinboro L. B. Lnr	88.19	10.15
May 31	"	115	2.67	May 31	"	89.15	116.2
Stand for Loading Weight Test							

1911		1911		1911		1911	
June 30	Lumber	106	61.31	June 30	Edinboro L. B. Lnr	89.67	61.31
July 31	"	89	17.80	July 31	"	90.65	62.00
"	"	186	60.30	Aug 30	"	92.01	58.1
Aug 30	"	90	58.1	Oct 31	"	94.01	22.99
Oct 31	"	63	22.48	Nov 30	"	94.95	20.39
"	"	115	51	Dec 31	"	95.93	18.04
Nov 30	"	119	20.11	Jan 31	"	96.66	10.36
"	"	107	25	Feb 28	"	97.38	32.86
Dec 31	"	68	18.01	Mar 31	"	98.03	49.66
Jan 31	"	73	10.36	Apr 30	"	99.32	57.8
Feb 28	"	49	15.46	May 31	"	100.01	53.60
Mar 31	"	71	15.09	"	"	"	"
"	"	116	"	"	"	"	"
Mar 31	"	97	15.00	"	"	"	"
Apr 30	"	48	8.58	"	"	"	"
May 31	"	23	2.33	"	"	"	"
"	"	188	32.58	"	"	"	"

Slides for Recording Device
13877

1900 Apr 30 Lumber 752. 2350 C. H. 30. By 14 Edison Bros 9908 7350

1905 Special Building Machinery
May 31 Lumber 27 710 May 31 E. & B. Bros 10076 1550
" " 135 10 July 30 " 10251 17064
" " 793 800 Oct 31 " 10247 16301
June 30 " 90 5800 C. H. 31 " 10236 2931
July 31 " 251 11711 Oct 31 " 10500 175
" " 47 112
" " 27 37
" " 26 16750
Aug 31 " 41 7931
Oct 31 " 35 175

1915 Slacks for Repair 7311
May 31 Lumber 293 557 May 31 E. & B. Bros 10057 507

Sulphonating Kettles
13963

1905 July 31 Lumber 50 553 July 31 W. Edison Bros 10016 3119
" " 63 616
" " 73 70
" " 109 1689
" " 114 188
" " 123 47
" " 126 51
" " 5 8000
" " 9 13347
" " 24 3202
" " 57 266
" " 58 227
" " 69 88
" " 76 45431

1905 Submarine Batteries for Drafting Work
July 31 Lumber 276 2013 July 31 E. & B. Bros 10076 7013
Oct 30 " 200 10076 10076
Oct 31 " 177 1776 Oct 31 " 10076 1250

1915 Spindle Building Machinery
Oct 31 Lumber 17 715 Oct 31 E. & B. Bros 10076 711
" " 27 23 Nov 30 " 10076 5792
" " 10 Dec 31 " 10076 2834
Nov 30 " 18 5072
" " 11 46
" " 66 2050
" " 80 108
" " 101 6256
" " 120 15
" " 144 468
" " 157 74
" " 212 4777
" " 220 12
" " 66 973
" " 124 101
" " 124 4777

Sheet No. _____

Name _____

Address _____

Special Passes

1898

1898	1898	1898	1898	1898	1898
Mar 31	Voucher	119	2400 Mar 31	878	2400
Apr 30	"	81	521 Apr 30	"	1100
May 31	"	185	2016 May 31	"	1125

1898	1898	1898	1898	1898	1898
Apr 30	Voucher	6	1400 Apr 30	1000	1400
"	"	67	"	"	"
"	"	64	"	"	"

1898	1898	1898	1898	1898	1898
Apr 30	Voucher	52	2400 Apr 30	1000	1400
"	"	60	"	"	"
"	"	67	"	"	"
"	"	69	"	"	"
"	"	93	"	"	"
"	"	114	"	"	"
May 31	"	12	"	"	"
"	"	48	"	"	"
"	"	70	"	"	"
"	"	77	"	"	"
"	"	79	"	"	"
"	"	125	"	"	"
"	"	135	"	"	"
June 30	"	31	"	"	"

Sheet No. _____

Name _____

Address _____

Village Administration - M. - Personal Doc

1898

1898	1898	1898	1898	1898	1898
Apr 30	Voucher	33	1962 Apr 30	1100	2400
"	"	60	"	"	"
"	"	67	"	"	"
"	"	69	"	"	"
"	"	93	"	"	"
"	"	114	"	"	"
May 31	"	12	"	"	"
"	"	48	"	"	"
"	"	70	"	"	"
"	"	77	"	"	"
"	"	79	"	"	"
"	"	125	"	"	"
"	"	135	"	"	"
June 30	"	31	"	"	"

1898	1898	1898	1898	1898	1898
Apr 30	Voucher	67	2400 Apr 30	1000	1400
"	"	74	"	"	"
"	"	125	"	"	"

Repaired Supplies for Village Administration - M. - Personal Doc

Apr 30, Voucher

XXX

Vand

Name _____
Address _____

Maps for Placid Compulsions Drive

Apr 30	Voucher	70	600	Apr 29	Phon. R. O. E.	2,117.77	600
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Special Drawing Board, P. Square

1966	Apr 30	Voucher	914	2159	Apr 29 501140 Const 477.211105	2159
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Heritage Recording Photo #2946

1916	May 31	Voucher	10	1916	May 31	Voucher	10
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Salesman Model Cylinder Record

June 30	Voucher	53	45 June 30	M. E. Ho. Maria Ho. Dr. 11 & 86	76.90
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Sheet No. _____

Name Selling Administrators F. M. Threlk. Div.
Address " #147

[illegible]

June 30	Transfer	31	115.6	June 30	Old Shaw St.	115.6	115.6
		36	115.6	July 31	"	115.7	115.7
		76	296.0				115.7
		103	1x5				115.7
		108	71.37				115.7
July 31		101	115.7				115.7
		108	115.7				115.7
		76	115.7				115.7
		61	3x2				115.7
		85	115.7				115.7
		128	115.7				115.7
		132	115.7				115.7

Putting Administrative ^{to} George F. M. Pauline Dir.

June 30	Voucher	37	51605	June 30	M. E. Andrews	11530	11461
			51605				11688

	78	69	
"	115	102	
"	41	80	
"	44	✓ 80	
"	79	(6) + 70	
"	90	388	
"	96	/ 120	
"	123	365	
"	132	1128	
"	137	1128	

Specification & Literature p 36, 97

James	30	Voucher	61	576	June 30	F.O.B.C.	Ex 11577	2076
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July 31	16	12.00	21	116.34	18
	65	320	21		3
	21	12.00			4

Sheet No. _____

Name _____

Address _____

Apple & Equipment #2829
 S. Blue Amber Record Unit (Investment)

1914	Nov 30	Bought to record	13	3477.11	Nov 30 Bought to record	13	3477.11	3477.11
		" "	109	145	" 31 Bought to record	13	3477.11	3477.11
		" "	114	276	" 31 Bought to record	13	3477.11	3477.11
		" "	123	79	" 31 Bought to record	13	3477.11	3477.11
		" "	144	332.90	" 31 Bought to record	13	3477.11	3477.11
		" "	8	104.0	" 31 Bought to record	13	3477.11	3477.11
		" "	20	175	" 31 Bought to record	13	3477.11	3477.11
		" "	31	23.00	" 31 Bought to record	13	3477.11	3477.11
		" "	32	620	" 31 Bought to record	13	3477.11	3477.11
		" "	33	1196	" 31 Bought to record	13	3477.11	3477.11
		" "	37	1017.34	" 31 Bought to record	13	3477.11	3477.11
		" "	39	1300	" 31 Bought to record	13	3477.11	3477.11
		" "	46	16	" 31 Bought to record	13	3477.11	3477.11
		" "	46	146	" 31 Bought to record	13	3477.11	3477.11
		" "	47	1239.44	" 31 Bought to record	13	3477.11	3477.11
		" "	48	1544	" 31 Bought to record	13	3477.11	3477.11
		" "	50	64	" 31 Bought to record	13	3477.11	3477.11
		" "	102	363.4	" 31 Bought to record	13	3477.11	3477.11
		" "	108	744.1	" 31 Bought to record	13	3477.11	3477.11
		" "	125	870.1	" 31 Bought to record	13	3477.11	3477.11
		" "	132	4800.1	" 31 Bought to record	13	3477.11	3477.11
		" "	126	1454.1	" 31 Bought to record	13	3477.11	3477.11
		" "	152	340.4	" 31 Bought to record	13	3477.11	3477.11
		" "	156	57.1	" 31 Bought to record	13	3477.11	3477.11
		" "	155	3425.94	" 31 Bought to record	13	3477.11	3477.11
		" "	48	2976.1	" 31 Bought to record	13	3477.11	3477.11
		" "	19	62	" 31 Bought to record	13	3477.11	3477.11
		" "	23	50	" 31 Bought to record	13	3477.11	3477.11
		" "	24	70	" 31 Bought to record	13	3477.11	3477.11
		" "	71	1784	" 31 Bought to record	13	3477.11	3477.11
		" "	77	87	" 31 Bought to record	13	3477.11	3477.11
		" "	80	250	" 31 Bought to record	13	3477.11	3477.11
		" "	104	44	" 31 Bought to record	13	3477.11	3477.11
		" "	115	571.00	" 31 Bought to record	13	3477.11	3477.11
		" "	120	1200	" 31 Bought to record	13	3477.11	3477.11
		" "	134	142	" 31 Bought to record	13	3477.11	3477.11
		" "	135	352	" 31 Bought to record	13	3477.11	3477.11
		" "	143	223	" 31 Bought to record	13	3477.11	3477.11
		" "	154	16	" 31 Bought to record	13	3477.11	3477.11
		" "	155	3444.74	" 31 Bought to record	13	3477.11	3477.11
		" "	10	938	" 31 Bought to record	13	3477.11	3477.11
		" "	18	165	" 31 Bought to record	13	3477.11	3477.11
		" "	19	3470	" 31 Bought to record	13	3477.11	3477.11
		" "	20	300	" 31 Bought to record	13	3477.11	3477.11
		" "	21	150	" 31 Bought to record	13	3477.11	3477.11
		" "	24	150	" 31 Bought to record	13	3477.11	3477.11
		" "	36	123	" 31 Bought to record	13	3477.11	3477.11
		" "	39	66	" 31 Bought to record	13	3477.11	3477.11
		" "	67	649	" 31 Bought to record	13	3477.11	3477.11
		" "	69	1392	" 31 Bought to record	13	3477.11	3477.11
		" "	84	720	" 31 Bought to record	13	3477.11	3477.11
		" "	91	20	" 31 Bought to record	13	3477.11	3477.11
		" "	107	2280	" 31 Bought to record	13	3477.11	3477.11
		" "		3477.11	" 31 Bought to record	13	3477.11	3477.11

Sheet No.

Name
AddressTools & Equipment #2878
W. Blue Amber, Keokuk, Iowa (Investment)

1973	1974	1975	1976	1977	1978
July 28 Bought & Freight	110	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Mar 31 To Balance	112	200	200	200	200
" " "	22	200	200	200	200
" " "	22	200	200	200	200
" " "	26	200	200	200	200
" " "	29	200	200	200	200
" " "	41	200	200	200	200
" " "	45	200	200	200	200
" " "	52	200	200	200	200
" " "	52	200	200	200	200
" " "	57	200	200	200	200
" " "	68	200	200	200	200
" " "	70	200	200	200	200
" " "	73	200	200	200	200
" " "	90	200	200	200	200
" " "	103	200	200	200	200
" " "	105	200	200	200	200
" " "	106	200	200	200	200
" " "	107	200	200	200	200
" " "	118	200	200	200	200
" " "	119	200	200	200	200
" " "	120	200	200	200	200
Apr 30	36	200	200	200	200
" " "	40	200	200	200	200
" " "	41	200	200	200	200
" " "	47	200	200	200	200
" " "	77	200	200	200	200
" " "	103	200	200	200	200
" " "	104	200	200	200	200
" " "	110	200	200	200	200
" " "	119	200	200	200	200
" " "	128	200	200	200	200
" " "	137	200	200	200	200
" " "	139	200	200	200	200
May 31	140	200	200	200	200
" " "	141	200	200	200	200
" " "	142	200	200	200	200
" " "	143	200	200	200	200
" " "	144	200	200	200	200
" " "	145	200	200	200	200
" " "	146	200	200	200	200
" " "	147	200	200	200	200
" " "	148	200	200	200	200
" " "	149	200	200	200	200
" " "	150	200	200	200	200
" " "	151	200	200	200	200
" " "	152	200	200	200	200
" " "	153	200	200	200	200
" " "	154	200	200	200	200
" " "	155	200	200	200	200
" " "	156	200	200	200	200
" " "	157	200	200	200	200
" " "	158	200	200	200	200
" " "	159	200	200	200	200
" " "	160	200	200	200	200
" " "	161	200	200	200	200
" " "	162	200	200	200	200
" " "	163	200	200	200	200
" " "	164	200	200	200	200
" " "	165	200	200	200	200
" " "	166	200	200	200	200
" " "	167	200	200	200	200
" " "	168	200	200	200	200
" " "	169	200	200	200	200
" " "	170	200	200	200	200
" " "	171	200	200	200	200
" " "	172	200	200	200	200
" " "	173	200	200	200	200
" " "	174	200	200	200	200
" " "	175	200	200	200	200
" " "	176	200	200	200	200
" " "	177	200	200	200	200
" " "	178	200	200	200	200
" " "	179	200	200	200	200
" " "	180	200	200	200	200
" " "	181	200	200	200	200
" " "	182	200	200	200	200
" " "	183	200	200	200	200
" " "	184	200	200	200	200
" " "	185	200	200	200	200
" " "	186	200	200	200	200
" " "	187	200	200	200	200
" " "	188	200	200	200	200
" " "	189	200	200	200	200
" " "	190	200	200	200	200
" " "	191	200	200	200	200
" " "	192	200	200	200	200
" " "	193	200	200	200	200
" " "	194	200	200	200	200
" " "	195	200	200	200	200
" " "	196	200	200	200	200
" " "	197	200	200	200	200
" " "	198	200	200	200	200
" " "	199	200	200	200	200
" " "	200	200	200	200	200

Sheet No.

Name
Address

Tools & Equipment #2879

1973	1974	1975	1976	1977	1978
June 30 To Balance	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
July 31	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Aug 30	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Sept 30	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Oct 31	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Nov 30	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Dec 31	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
1974	112	200	200	200	200
Jan 31	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Feb 28	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Mar 31	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
Apr 30	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200
May 31	112	200	200	200	200
" " "	116	200	200	200	200
" " "	121	200	200	200	200
" " "	125	200	200	200	200
" " "	123	200	200	200	200

Name _____
Address _____

Name
Address

Tube Loading Machines 75-1/4" #3009

1875		1912		1912		1912		1912	
January 31	145	23.05	June 31	By Eschberg	6018		32.00	51	
July 31	112	58.18	July 31	" "	6171		58.18	68	
Aug 31	70	41.20	Aug 31	" "	6214		34.01	13	
" "	12.9	29.83	Sept 30	" "	6458		61.54	19	
Sept 30	73	101.13	Oct 31	" "	6600		388.88	8	
" "	88	20.81	Nov 30	" "	6711		344.16	11	
" "	79	68.63	Dec 31	" "	6803		3077.30	10	
Oct 31	100	106.34	Jan 31	" "	6935		1343.20	8	
" "	107	10.00	Feb 28	" "	7007		2197.54	7	
Nov 30	119	38.95							
" "	30	9.50							
" "	119	32							
" "	26.9								
Dec 31	121	87.44							
" "	26	3.25							
" "	117	1.24							
" "	106	3.84							
1913	152	20.76							
Jan 31	118	30							
" "	53	50							
" "	54	25							
" "	101	1.70							
" "	104	20.00							
" "	107	1.24							
Feb 28	89	1.24							
" "	81	1.00							
" "	121	27.50							
" "	120	1.13							
Mar 31	20	2.00							
" "	"	"							
" "	119								
" "	120								
" "	139								
Apr 30	"	"							
" "	"	"							
May 31	"	"							
June 30	"	"							
July 31	"	"							
Aug 31	"	"							
Sept 30	"	"							
Oct 31	"	"							
Nov 30	"	"							
Dec 31	"	"							

Sheet No. _____

Name _____

Address _____

Sheet No. 35

Name _____

Address _____

Tubing Loading Machines (Spare Parts) # 3055-

1910		1911		1912		1913		1914	
Aug 31	2000000	127	1270	Aug 31	By 8.86a Inr	6324	1250		
Sept 30	" "	121	938	Sept 30	" "	6464	938		
Oct 31	" "	20	1000	Nov 30	" "	6960	10340		
Nov 30	" "	18	1000	Dec 31	" "	7060	12325		
Dec 31	" "	114	10370						
July 15	" "	124	12325						

1910		1911		1912		1913		1914	
Mar 31	2. Lumber	120	968	Mar 31	By 8.86a Inr	7700	968		

Sheet No. _____

Name
Address

Sheet No. 36

Name
Address

Tule Ringing Machine #3082

1911		1912		1913	
Aug 31	20 Voucher	129	262.5 Aug 31	By Ed & Co Inc	63.46
Sept 30	"	121	155.1 Sept 30	"	64.69
Oct 31	"	119	195.1 Oct 31	"	66.09
Nov 30	"	120	31 Nov 30	"	67.20
Dec 31	"	121	151.9 Dec 31	"	68.31
	"	116	03 Jan 31	"	69.43
	"	156	24 Feb 28	"	70.65
1913	"	155	121.65	"	64.87
Jan 31	"	155	200.46	"	
Feb 28	"	120	168.37	"	
1913		1913		1913	
Mar 31	2 Voucher	120	73.46 Mar 31	By Ed & Co Inc	72.08
Apr 30	"	140	170.71 Apr 30	"	72.46
May 30	"	143	20 May 30	"	75.76
June 30	"	129	551.26 June 31	"	77.41
July 31	"	140	197 Aug 31	"	78.60
	"	73	23 Sept 30	"	79.90
	"	129	326.45 Oct 31	"	80.93
Aug 30	"	116	713.19 Nov 30	"	82.08
Sept 30	"	29	230 Dec 31	"	83.6
	"	169	207.01 Jan 31	"	84.57
Oct 31	"	36	16 Feb 28	"	85.4
	"	121	29 Mar 31	"	86.3
	"	122	118.17 Apr 30	"	87.01
Nov 30	"	111	125.03 May 31	"	88.6
Dec 31	"	46	1.3 June 30	"	89.7
1914	"	156	176.70 July 31	"	90.7
Jan 31	"	127	207.8 Aug 30	"	91.7
Feb 28	"	27	63 Sept 30	"	92.7
	"	144	134	"	
Mar 31	"	106	76.3	"	
Apr 30	"	115	08	"	
	"	116	35.60	"	
May 31	"	111	04	"	
	"	115	40.21	"	
June 30	"	106	157.47	"	
July 31	"	136	176.53	"	
Aug 30	"	90	210.0	"	
Sept 30	"	91	305.05	"	
	"	95	337.00	"	

Sheet No. _____

Name
Address

Sheet No. _____

Name
Address*Puting Reproduce*

11155

1925

Date	Location	Alt
May 31	"	121
June 30	"	108
July 31	"	122

1926

Date	Location	Alt
April 29	E. Ocean water	1151
May 21	"	1128
June 30	"	11521
July 31	"	11674

37

11157
11157
11361
11361

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Taking Hypo-Mind Out of Tanks. #3233

1913

Jan 31 To Lumber 100
Feb 28 " " 124

Apr 30 To Lumber 140
May 31 " " 147
July 30 " " 120
July 31 " " 129
Dec 31 " " 154

1914

Jan 31 By Lumber 1374
Feb 28 " " " 1256

Apr 30 By Lumber 939
May 31 " " " 941
July 30 " " " 900
July 31 " " " 210
Dec 31 " " " 1656

1915

Jan 31 By Lumber 1374
Feb 28 " " " 1256

Apr 30 By Lumber 939
May 31 " " " 941
July 30 " " " 900
July 31 " " " 210
Dec 31 " " " 1656

1916

Feb 28 To Lumber 124

Turn of Smooth Nags. #3242

210 Feb 28 By Lumber 1374

210

Sheet No. _____

Name _____

Address _____

Twelve Press Lumber Gears

13205

1875 July 28 To Lumber 124	1875 July 28 By Cash on Hand 127	3533
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Lumber Reaming Machine

13251

1875 July 28 To Lumber 124	1875 July 28 By Cash on Hand 7000	1779
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2111

Sheet No. _____

Name _____

Address _____

Three Drawing Boards & Tables

13353

1875 May 31 To Lumber 142	1875 May 31 By Cash on Hand 5928	5928
------------------------------	-------------------------------------	------

Two Air Assembling Bays

1311

1875 May 31 To Lumber 142	1875 May 31 By Cash on Hand 2364	2364
June 30 " " " 120	June 30 " " " 1107	1107

Sheet No. _____

Name _____

Address _____

No. Lippett

11

May 31 To Cash 11.25

18 May 31 By L.M. Dr. 87.35

15 Oct 31 " " 11.50

11.25

11.25

11.25

11.25

11.25

11.25

11.25

11.25

11.25

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11.25

11.25

Sheet No. 106

Name _____

Address _____

Three Ringing Finger Set #3088

1912 Oct 31 To Cash 12.9

1912 Oct 31 By B.B. Dr. 66.10

16.3

Testing Blowers as per Sketch #3122

1912 Oct 31 To Cash 11.9

1912 Oct 31 By B.B. Dr. 66.15

15.8

No. 1's Lamp Glass

11

May 31 To Cash 17.3

July 31 " 25.1

July 31 " 50

17.0

17.3

27.6

27.1

27.0

27.1

27.0

27.1

27.0

27.1

27.0

27.1

27.0

27.1

27.0

27.1

27.0

27.1

27.0

2012 May 31 To Cash 100.32

17.20

105.50

103.50

104.76

103.21

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

103.70

Testing Boards #3151

1912 Nov 31 To Cash 12.1

1912 Nov 31 By B.B. Dr. 67.77

3.8

1912 Dec 31 " " 15.5

1912 Dec 31 " " " 67.77

47.8

Name
Address

Testing Outfit 13471

47

Aug 31	To Balance	116	1712	Aug 31	By E.S.B. Co. Dr	7178	1712
Sept 30	"	78	11400	Sept 30	"	7990	1594
"	"	109	1584	Dec 31	"	158	11400
			1726				7178

Three Studio Outlets Booklets 25.00

less

Sept 30	To Cash	18	620	Sept 30	By T.D. & Son Inc	5021	73708
" "	"	74	30	" "	"	"	
	"	92	206				
	"	109	22802				

Tube Lacks

1913

Yon	30	To Lumber	144	16358	Yon	30	By E.B.C. Inc	8221	16358
Dec	31	"	156	277 ³⁹ / ₁₀₀	Dec	31	"	8310	277 ³⁹ / ₁₀₀

Sheet No. _____

Name
Address

Turn Out Two Rings 13580

1943

Dec 31	Voucher	156	315	Dec 31 E. B. H. Inc	83912	315
--------	---------	-----	-----	---------------------	-------	-----

Three Miners Lamp Tubes

law

Mar 31	Voucher	106	840	Mar 31, 3y, ESB 69 dm	8674	840	
May 31	"	103	425	May 31	"	8876	103

Turn up 4 Pedestals 1911 #3677

1914

May 31 Voucher 115 9th May 31 By E.B.C. Inv 8877 9th

Sheet No. _____

Name _____

Address _____

T. & L. Express - Irving Ford - Lumbering Cart
3479

May 31	Truck	221	294	May 31	Edmundson Bros	1075	294
--------	-------	-----	-----	--------	----------------	------	-----

Sept 30	Truck	200	1600	Sept 30	Edmundson Bros	10376	1600
---------	-------	-----	------	---------	----------------	-------	------

Jan 31	Truck	150	100	Jan 31	Edmundson Bros	10220	100
--------	-------	-----	-----	--------	----------------	-------	-----

Sheet No. _____

Name _____

Address _____

Lapping Saw for Lapping Lumber Pts.
W 4170

May 31	Truck	100	923	May 31	Edmundson Bros	1100	923
June 30	"	100	915	June 30	"	1101	915

June 30	Truck	71	208	June 30	F. P. P. Bros	1100	208
---------	-------	----	-----	---------	---------------	------	-----

June 30	Truck	70	10	June 30	Edmundson Bros	1100	10
July 31	"	80	715	July 31	"	1101	715
July 31	"	100	600				

Name _____
Address _____

Two Picture Frames Complete
\$14.50

FOR SALES PEOPLE: 703/666-8700

June 30	Voucher	108	96 June 30	PAE Inc. - General	111589	96
July 31	"	60	96 July 31	"	111697	96

Two Box Trunks for Dice Rec. Rg. Prison

1946	June 30	Voucher	108	09 June 30	P. E. Lee. Inc.	11574	09
July 31	"	"	132	July 31	"	11708	540

Twelve 3 Point Edging Yards

1916	June 30	Yankee	108	117.85	June 30	P.R.E. Inc	Ind. 115.09	117.85
------	---------	--------	-----	--------	---------	------------	-------------	--------

Sheet No. _____

Name _____
Address _____

Two Diamond Tipping Machine
#4250

THE ABOVE PRICES, THROUGHOUT, DOLLARS

1916	June 30	Vanahau	108	1916	June 30	E Phen. ¹⁹¹⁶ 1160h	670J
	July 31	"	12V		July 31	" " " 11711	669J

Two Shares for Edison Corp. Water System
1868

July 31	Voucher	60	675	July 31	Em. Bldg. Exp. 81	117.76	1636
"	"	132	9.66				
			16.36				

Sheet No.

Name _____

Address

Pen Double Baker Vanted Hands
4269

14269

July 31	Voucher	63	950	July 31	Green Ashland Land Recl.	11774	15260
		132	4310				-

Proctor Bulletin Boards 17" x 22"

July 31	Donner	92	1456	July 31	M.C. Inc. Cont'n	11705	2996
		109	60				
		134	1478				
			2898				

Sheet No.

Name _____

Address

Three Grams for Bulletin Purposes
14305

11303

1916	July 31	Voucher 93	19 July 31	EPMs, Cont'd	11/24	1	SW
	"	132	132				

Two Bushings for Manned Grilling Machine
4307

May 31	Voucher	132	X827	finder	1916	31	P.H.E. Inc. Dec 7 1916	11751	X827
--------	---------	-----	------	--------	------	----	------------------------	-------	------

Sheet No.

Name

Address

Three Ring Duplicating Machines

#4319

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

DATE 10/16/01 BY 60322 UCBAW

July 31 Voucher 122 886 July 31 WCHA General Fund 11713 886

Three Ring Duplicating Machines

#4319

July 31 Voucher 121 886 July 31 WCHA General Fund 11714 886

W. S. Cushman Stone Co.
Labor & material

V
Valve cleaner
Vertical Drilling Spindle

89979
100
100
86623

Address

Varnish Pots #4232

1916								
Jan	30	Voucher	108	235	Turn	3	W.E. Inc	11511
Feb	31	"	15	271	Turn	31	"	11699
		"	122	319				35665
				319				31994

Name
Address

Wm. & M. Natural on Street & 2 by N. A. Bachman & 2053

1910				1910			
apl 30	12	3243043	apl 30	12	3243043	12664	
" "	49	1530	" "	49	1530	5490	
" "	61	380	" "	61	380	18	
" "	62	44681	" "	62	44681		
" "	76	425	" "	76	425		
" "	90	900	" "	90	900		
" "	104	81	" "	104	81		
" "	116	61482	" "	116	61482		
" "	117	30741	" "	117	30741		
" "	118	3271688	" "	118	3271688		
May 31	6	450	May 31	6	450		
" "	21	972	" "	21	972		
" "	22	800	" "	22	800		
" "	24	2100	" "	24	2100		
" "	36	8570	" "	36	8570		
" "	48	14205	" "	48	14205		
" "	53	570	" "	53	570		
" "	64	905	" "	64	905		
" "	66	37212	" "	66	37212		
" "	68	204	" "	68	204		
" "	85	1032	" "	85	1032		
" "	95	33	" "	95	33		
" "	107	544	" "	107	544		
" "	114	85	" "	114	85		
" "	117	50287	" "	117	50287		
" "	118	100473	" "	118	100473		
June 30	119	3168728	June 30	119	3168728		
" "	17	200	" "	17	200		
" "	33	570	" "	33	570		
" "	35	14205	" "	35	14205		
" "	37	186	" "	37	186		
" "	49	32	" "	49	32		
" "	50	88662	" "	50	88662		
" "	62	490	" "	62	490		
" "	69	1200	" "	69	1200		
" "	73	45	" "	73	45		
" "	90	6851	" "	90	6851		
" "	91	79997	" "	91	79997		
" "	92	338022	" "	92	338022		
July 31	47	101930	July 31	47	101930		
" "	63	10	" "	63	10		
" "	88	9914	" "	88	9914		
" "	89	94551	" "	89	94551		
" "	90	72575	" "	90	72575		
" "	91	766	" "	91	766		
aug 31	45	97292	aug 31	45	97292		
" "	66	30	" "	66	30		
" "	85	850	" "	85	850		
" "	97	50859	" "	97	50859		
" "	98	25430	" "	98	25430		
" "	100	2727	" "	100	2727		
sept 30	54	17208	sept 30	54	17208		
" "	66	78	" "	66	78		
" "	81	240	" "	81	240		

Sheet No.

Name

Address

Sheet No. 50

Name

Address

G. Wirth

Labor & Material for

1908
Mar 31 To Voucher

45
71
10
15
52
52
492

1908
Mar 31 To Voucher
May 31 " "
52
115

1908

54	Mar 31 By L.M. Invoice	63	110
56	July 31 " " "	37	578
115	Mar 31 " " "	93	135
370	Apr 10 " " "	100	492
492			

1908

154	Mar 31 By L.M. Invoice	1908	150
33	May 31 " " "	1935	33

P. Weber

Labor & Material for

1908
Mar 31 To Voucher

71
86
80
79
80
56
96
104
90
99
79
91
111
84
105
105
113
104
102
133
115
90
103
118
119
90

1908

710	Mar 31 By L.M. Invoice	60	710
86	Apr 30 " " "	117	328
80	May 31 " " "	12	174
79	June 30 " " "	25	289
80	July 31 " " "	32	289
56	Aug 31 " " "	40	329
96	Sept 30 " " "	48	377
104	Oct 31 " " "	58	435
90	Nov 30 " " "	58	493
99	Dec 31 " " "	67	560
79	Jan 27 " " "	88	648
91	Mar 31 " " "	92	740
111	May 31 " " "	109	849
84	June 30 " " "	116	965
105	July 31 " " "	125	1090
105	Aug 31 " " "	134	1224
113	Sept 30 " " "	141	1365
104	Oct 30 " " "	147	1512
102	Nov 30 " " "	154	1666
133	Dec 31 " " "	161	1827
115	Jan 31 " " "	175	1992
90	Feb 28 " " "	183	2175
103	Mar 31 " " "	195	2370
118	Apr 30 " " "	199	2569
119	May 31 " " "	210	2779
90	June 30 " " "	228	3007

Sheet No. 51Name
Address

A. Wirth Labor & Material for

1908				1908			
Mar 31	To Voucher	71		Mar 31	By L.M. Invoice	66	44
Apr 30	"	56		Apr 30	"	116	116
May 31	"	50		May 31	"	194	310
June 30	"	77		June 30	"	240	550
July 31	"	80		July 31	"	338	888
Aug 31	"	57		Aug 31	"	481	1369
Sept 30	"	96		Sept 30	"	485	1854
Oct 31	"	104		Oct 31	"	562	2416
Nov 30	"	90		Nov 30	"	582	2998
Dec 31	"	99		Dec 31	"	669	3667
Jan 31	"	87		Jan 31	"	1169	4836
Feb 30	"	108		Feb 31	"	1245	6081
Mar 31	"	108		Mar 31	"	1245	7326
Apr 30	"	113		Apr 30	"	1360	8686
May 30	"	104		May 31	"	1494	10180
Jun 30	"	102		Jun 30	"	1576	11756
Jul 31	"	133		Jul 31	"	1653	13409
Aug 31	"	115		Aug 31	"	1766	15175
Sept 30	"	103		Sept 30	"	1844	17019
Oct 30	"	118		Oct 31	"	2172	19191
Nov 30	"	117		Nov 30	"	2370	21561
Dec 30	"	80		Dec 31	"	2571	24132
Jan 31	"	88		Jan 31	"	2690	26822
Feb 31	"	96		Feb 31	"	2825	29647
Mar 31	"	96		Mar 31	"	2825	32472
Total 7237							

Harden Regt

St. Wolk Labor & Material for

1908				1908			
Oct 31	To Voucher	48		Oct 31	By L.M. Invoice	328	11
Nov 30	"	44		Nov 30	"	3530	3641

Sheet No. 102Name
Address

Wells Fargo & Co Express L.M.

1912				1912			
May 31	To Voucher	43		May 31	By L.M. Invoice	5833	450
June 30	"	139		June 30	"	6117	6617

M.H. Hagel L.M.

1912				1912			
Oct 31	To Voucher	143		Oct 31	By L.M. Invoice	1601	80

Harden Regt #3102

1912				1912			
Oct 31	To Voucher	119		Oct 31	By L.M. Invoice	6601	1230
Nov 30	"	124		Nov 30	"	6709	1350

Sheet No. _____

Name
AddressWooden Canning Saw for Kinetic Records
#3644

1914	Mar 31	106	211	Mar 31	By M. S. Dunham	8713	711
	Apr 30	116	211	Apr 30	"	8794	711

1914	Apr 30	116	861	Apr 30	By M. S. Dunham	8814	861
	May 31	103	53	May 31	"	8813	745
	"	115	295	Jun 30	"	8865	2540
	June 30	27	17	July 31	"	8975	1412
	"	103	11	Aug 30	"	9189	171
	"	106	251				
	July 31	136	141				
	Aug 30	90	171				

1915	Jan 31	133	118	Jan 31	By M. S. Dunham	9149	118
	Feb 27	147	74	Feb 28	"	9714	74

Sheet No. _____

Name
AddressWheel Tires
#38311

1915	July 28	104	961	July 28	By M. S. Dunham	9744	961
------	---------	-----	-----	---------	-----------------	------	-----

1915	Mar 31	149	124	Mar 31	By M. S. Dunham	9815	1406
	"	121	504	Apr 30	"	9877	800
	Apr 30	171	135				
	"	252	800				

1915	Mar 31	171	255	Mar 31	By M. S. Dunham	9914	255
------	--------	-----	-----	--------	-----------------	------	-----

Wood Patterns for Lunch Log 13947

1915	1916	1917	1918	1919	1920	1921	1922
June 30	112	111	110	109	108	107	106
July 31	112	111	110	109	108	107	106
Aug 31	112	111	110	109	108	107	106
Sept 30	112	111	110	109	108	107	106
Oct 31	112	111	110	109	108	107	106
Nov 30	112	111	110	109	108	107	106
Dec 31	112	111	110	109	108	107	106

1915

Woodward Operating Plant

1915	1916	1917	1918	1919	1920	1921	1922
June 30	112	111	110	109	108	107	106
July 31	112	111	110	109	108	107	106
Aug 31	112	111	110	109	108	107	106
Sept 30	112	111	110	109	108	107	106
Oct 31	112	111	110	109	108	107	106
Nov 30	112	111	110	109	108	107	106
Dec 31	112	111	110	109	108	107	106

1915

Woodward Operating Plant

1915	1916	1917	1918	1919	1920	1921	1922
June 30	112	111	110	109	108	107	106
July 31	112	111	110	109	108	107	106
Aug 31	112	111	110	109	108	107	106
Sept 30	112	111	110	109	108	107	106
Oct 31	112	111	110	109	108	107	106
Nov 30	112	111	110	109	108	107	106
Dec 31	112	111	110	109	108	107	106

O'Neal Bros 13957

1915	1916	1917	1918	1919	1920	1921	1922
June 30	112	111	110	109	108	107	106
July 31	112	111	110	109	108	107	106
Aug 31	112	111	110	109	108	107	106
Sept 30	112	111	110	109	108	107	106
Oct 31	112	111	110	109	108	107	106
Nov 30	112	111	110	109	108	107	106
Dec 31	112	111	110	109	108	107	106

1915

Woodward Operating Plant

1915	1916	1917	1918	1919	1920	1921	1922
June 30	112	111	110	109	108	107	106
July 31	112	111	110	109	108	107	106
Aug 31	112	111	110	109	108	107	106
Sept 30	112	111	110	109	108	107	106
Oct 31	112	111	110	109	108	107	106
Nov 30	112	111	110	109	108	107	106
Dec 31	112	111	110	109	108	107	106

1915

Woodward Telephone 13957

1915	1916	1917	1918	1919	1920	1921	1922
June 30	112	111	110	109	108	107	106
July 31	112	111	110	109	108	107	106
Aug 31	112	111	110	109	108	107	106
Sept 30	112	111	110	109	108	107	106
Oct 31	112	111	110	109	108	107	106
Nov 30	112	111	110	109	108	107	106
Dec 31	112	111	110	109	108	107	106

Sheet No. _____

Name
AddressHood Patteray
13995

1911	Oct 31	Number	177	356	Oct 31	Edwin John Hobbs	18571	356
------	--------	--------	-----	-----	--------	------------------	-------	-----

Hood Patteray
13995

1915	Oct 31	Number	177	104	Oct 31	Edwin John Hobbs	18571	104
	Nov 30	"	214	130	Nov 30	"	18577	135

Hood Patteray
13995

1916	Jan 31	Number	39	392	Jan 31	Edwin John Hobbs	18571	1078
			118	636				

Sheet No. _____

Name
AddressHood Patteray
14073

1916	July 29	Number	126	2150	July 29	Edwin John Hobbs	18571	2150
------	---------	--------	-----	------	---------	------------------	-------	------

Hood Patteray
14073

1916	July 29	Number	126	1471	July 29	Edwin John Hobbs	18571	1471
------	---------	--------	-----	------	---------	------------------	-------	------

Hood Patteray
14073

1916	Apr 30	Number	76	700	Apr 29	Edwin John Hobbs	18571	2152
			94	1273				

Sheet No. _____

Name _____

Address _____

Sheet No. _____

Name _____

Address _____

Charles M. L. Malt & Co. Motor Cars for Hon. Cadwallader
2172

July 31 Thursday 1914 132 11.3 July 31 1914 E.P. Malt & Co. 11.50 113

Sheet No. _____

Name _____

Address _____

2nd Copper } 1-
Cable Battery } * 2059

WEST ORANGE LABORATORY RECORDS EQUIPMENT AND SUPPLIES

The unbound correspondence, trade circulars, and other loose documents in this subseries relate to the purchase of equipment and supplies for the West Orange laboratory and other Edison interests. Many of the documents are unsolicited promotional circulars or routine letters involving the specifications, availability, cost, and delivery of equipment and supplies. Included are memoranda asking that materials be ordered; requests for prices or samples; and letters acknowledging orders from, or shipments to and among, Edison's interests. Orders for equipment, supplies, and foundry work often include requisition numbers, voucher numbers, or laboratory project numbers indicating the experiment or the Edison company to be billed for the order. In most cases the information or materials were requested on Edison's behalf by members of his laboratory staff, including Alvin D. Caskey, Fred C. Devonald, and Frederick P. Ott. Some of the outgoing and incoming letters involve the work of Henry J. Harms, Jr., and George E. Small on Edison's concrete house. A small group of items indicates Edison's direct oversight of individual requests or purchases.

Less than 5 percent of the documents have been selected. In general, only items that indicate Edison's direct participation in the order, purchase, and receipt of equipment and supplies have been selected. Also included are several of the Harms and Small letters and a list of chemicals sent to the laboratory from the defunct New Jersey and Pennsylvania Concentrating Works in Ogden, New Jersey. Related documents that provide an overview of laboratory purchases and expenditures may be found in the laboratory account books.

ALFRED F. MOORE.
CHAS. E. KINGS.
ANTHONY BOURDONVILLE.

ESTABLISHED 1820.

Alfred F. Moore

Manufacturer of Insulated Wire for all Electrical Purposes

No. 200 & 203 North Third Street, corner Race

DICTATED BY JWC/LBH

Philadelphia, March 6, 1899. 1899

Mr. Thomas A. Edison,

Laboratory,
Orange, N.J.

Dear Sir:

We are in receipt of your order #11458 for #23, #28 and #30 B. & S. Gauge Iron Wire cotton covered. We herewith enclose you a sample of #31 B. & S. Gauge soft iron wire, also a sample of #30 B. & S. Gauge bright iron wire, which are the only two sizes we have in stock. Kindly let us know if you can use either of these on your order for #30.

In reference to the #23 and #28, we cannot make any less than one stone on these sizes, which would make about $6\frac{1}{2}$ lbs. each of the #28 and 12 lbs. of the #23.

Kindly advise us by return mail just what kind of iron wire you wish on the order, whether it is to be Norway or plain charcoal iron wire.

Yours very truly,

Alfred F. Moore

We want the softest charcoal iron wire nearest to sizes asked for and in such an amount will come nearest our order we are in a great hurry Edison



NORTH AMERICAN TRANSPORTATION & TRADING CO.

618 FIRST AVE.

SEATTLE, WASH., July 23, 1900.

Mr. Thos A. Edison,

Orange N.J.

Dear Sir:

Agreeable to the request of our Vice President, Mr. W. H. Isom, under date of April 6, we are sending to you today by express, charges prepaid, one box of Cape Nome sand, weighing 95 pounds and containing three sacks, one of sand in its natural state, one of tailings which have gone through the rocker without mercury; and the third of tailings through rocker with mercury.

Yours very truly,

NORTH AMERICAN TRANSPORTATION & TRADING CO.

Traffic Agent.

CABLE ADDRESS, INSULL, NEW YORK. LIEBER'S CODE, A. B. C. 4TH EDITION. PRIVATE CODE.
TELEPHONE CONNECTION.

TRADE **G. I.** MARK.
GENERAL INCANDESCENT ARC LIGHT CO.
FACTORY AND GENERAL OFFICES,
572-576 FIRST AVENUE, Cor. 33d STREET,
NEW YORK.

CHICAGO, ILL. 48 WEST JACKSON BOULEVARD,
PHILADELPHIA, PA. 822 DREXEL BLDG.
BOSTON, MASS. 21 MILK ST.
ST. LOUIS, MO. 828 CENTURY BLDG.
CLEVELAND, OHIO. 39-47 EAST PROSPECT ST.
MILWAUKEE, WIS. 409 WILKIN BLDG.
MINNEAPOLIS, MINN. 515 QUARANTY BLDG.
DENVER, COLO. 821 19TH ST.
CINCINNATI, OHIO. 871 PENN BLDG.
SAN FRANCISCO, CAL. 888 FARDOTT BLDG.
CHARLOTTE, N. C. Y. M. O. A. BLDG.
EXPORT DEPARTMENT, N. Y. 575-576 FIRST AVE.

WHEN ANSWERING PLEASE REFER TO Sales Dept. PHK
New York, Sept. 20th, 1900.

Thomas A. Edison, Esq.,

Orange, N. J.

Dear Sir:-

I beg to acknowledge with thanks receipt of yours of the 19th, inst, referring to two keyless sockets which you have sent me by express, and which I have received.

They are not, however, the sockets I want, and as the matter is a very important one apparently, take the liberty of returning the blueprint herewith with the following explanation.

I have drawn on this blueprint a sketch of the socket which you sent me. It is one of the forms of old keyless sockets No. 1 of the Bergmann catalogue and not the socket No. 6 which I am looking for.

By reference to the blueprint you will readily recognize the difference, and I hope ^{you yet} may be able to find one of the No. 6 sockets.

The old No. 1 socket is acorn shape. The No. 6 socket is more of a barrel shape. In the No. 1 socket the upper brass shell "A" simply checks or fits into the lower brass shell "B", and the two are held together by the ^{rubber} ~~copper~~ screw ring "C", while in the No. 6 socket the brass shell "A" is furnished with a male spun thread and the brass shell "B" has the female thread, and the two are screwed together, and as I remember it, the insulating ring "C" is not a screw ring at all, but a slip ring, which is cemented into the shell

ADDRESS ALL CORRESPONDENCE TO THE COMPANY.

T-A-B-

Page 2-----

"A". The shell "A" screwing into the shell "B", of course, no screw ring was necessary to hold them together.

Very respectfully yours,



Atty. for S. Bergmann.

PHK
P



GIRO-CONTO
REICHSBANK

TELEGRAMM-ADRESSE: FULGURA BERLIN.

PERNSPR.: ANSCHLÜSSE:
AMT II, N^o 8000 u. 8652.
80/2m.

A.B.C. Code used

BERGMANN-
ELEKTROMOTOREN UND DYNAMO-WERKE AKTIENGESELLSCHAFT.

file

Berlin N. d. d. 19th. Nov. 1900.
Oudendijkstr. 19, 11. 11.
nach drück. 10. 11.

Thomas A. Edison, Esq.,

Llewellyn Park,

Orange, N. J.

My dear Mr. Edison,

J.N^o

I received from Mr. Bergmann your note, requesting me to secure for you a number of addresses and prices for "rare metals", which I however understand to be for preparations of rare metals called "rare earths".

The address you indicated in your note was very incomplete, but as you will see from the enclosed catalogue of E. de Haën Chemical Works "List", Hannover, I found the party you have been in relation with.

I eliminated three concerns that come into question, namely, The List Works at Hannover, Kunheim & Co. Berlin and Dr. O. Knöfler & Co. at Plotzensee, Berlin.

The two latter concerns only make the Thorium and Cerium Nitrates, while the concern E. de Haën makes preparations of a number of other rare metals, such as of Beryll, Calcium, Cerium, Didym, Erbium, Lanthan, Thorium, Titanium, Uranium, Yttrium, Zirkonium. All these in a number of different combinations.

I have written this concern for their best discounts for

Bergmann-Elektromotoren- und Dynamo-Werke Aktiengesellschaft.

Thomas A. Edison, Esq., Orange, N. J. contd. 19th. Nov. 1900. -

different quantities and hope to be able to inform you about this by next mail.

Bergmann requests me to tell you that any order you have to place for any of these substances you had best turn over to us and it shall have our best attention, *at cost*,

Hoping to hear from you on this subject, I remain with kindest regards,

Yours Faithfully,

H. Schuck

*Randolph gave this to
Dwight & have him watch
for the material*

Warren, Ohio, April 16, 1901.

Laboratory Thos. A. Edison,

Orange, N. J.

Dear Sirs:-

Yours of the 10th inst., at hand and noted. I have written the Superintendent of our mine to forward us at once some gravel, and as soon as it is received will forward fifteen pounds of it, properly marked. It will probably be two or three weeks before we receive it, but as soon as it arrives will forward it and advise you also. If your machine works satisfactorily, we may be able to do some business with you.

Very Truly, Yours,

S. B. Palm,

Vice Pres. Vermejo Gold Mining
Co.



*Balmain
go to give us one
sample - Let me know
when 10 days are up
E.*

NEWARK, N.J.

5/1/1901.

Mr. Thomas A. Edison,
Orange, N. J.

Balmain

Dear Sir:

Referring to your order handed the writer this afternoon,
we take pleasure in advising you, that we expect to be able to for-
ward you within the next ten days, two sample castings, which we
trust will enable you to make such arrangements as you have in view.

Very truly yours,

BENJAMIN ATHA & COMPANY

By *L. B. Jones*

62 Battery

[PHOTOCOPY]

Edison, N.J., Nov., 25th, 1901.

List of chemical apparatus in box marked #3.
Shipped to
Thomas A. Edison,
Orange, N.J.

-----oOo-----

- 2-1 gallon flask #6344A.
- 11- #6270 cast tubes 5/8" x 5"
- 2 funnel tubes,
- 1- 13/16" glass tube 2' long,
- 1- 9/16" glass tube 2' long,
- 1- 1/2" glass tube, 2' long,
- 34 odd sizes of glass tubing 3" to 12" and 1/4" to 3/8" dia.
- 18 pieces 1/8" to 1/4" dia. x 6" to 16" solid round glass,
- 20 pieces solid glass,
- 2- 1 qt. flasks #8717,
- 2- 16 oz. flasks #8717,
- 1- 1 qt. #8449 Woulff's bottles,
- 5- #9365 triangles 3",
- 1- 6" #6389 funnels,
- 1- 8" #6389 funnels,
- 1- 3-1/2" #6389 funnel,
- 6- 6" #6389 funnels,
- 1- 1/2 gal #5402 globe shape glass stoppered funnel,
- 1- 20 oz. #6178 dishes evaporating,
- 1- 10" #6178 dishes evaporating,
- 18 butter dishes,
- 2 pinch cocks,
- 5 pkgs No. 590 x 12-1/2 C.M filtering paper,
- 2- 100 sheets each 8" filtering paper,
- 1- 100 sheets each 10" filtering paper,
- 1- 4 oz. round wood box, chromium oxide hydrate,
- 1- 4 " " manganese sulphate,
- 1- 1 lb. pkgs sodium carbonate C.P. powdered,
- 1- bottle of solution, (not labeled)
- 1- bottle of acid, (not labeled).

[PHOTOCOPY]

Edison, N.J., Nov., 22nd, 1901.

List of chemicals in Box marked #3.

Shipped to
Thomas A. Edison,
Orange, N.J.

1-3 gal. glass bottle, 1/2 full, marked,	ammon. oxalate C.P.
1-1 1/2 " " " "	full, marked, carbonate soda CP.
1-2 " " " "	1/2 full, marked, (not labeled)
1-1 1/2 " " " "	1/2 full, marked, ammonia sulfide N.H.4.N.H.3.
1-1 " " " "	full, marked, Buffalo Ind. the water
1-1 1/2 " " " "	full, marked, acetic acid
1-1 " " " "	1/4 full, marked, (not labeled)
1-1 qt. " " " "	1/2 full, marked, N.H.4.N.H.3.
1-1 " " " "	1/3 full, marked, benzene
1-1 " " " "	3/4 full, marked, bottled litho. oil
1-1 " " " "	1/3 full, marked, phosphoric acid 50
1-1 " " " "	full, marked, blue vitrol
1-1 " " " "	3/4 full, marked, ammonium chloride C.P.
1-1 " " " "	full, marked, oxalic acid
1-1 " " " "	1/2 full, marked, potassium ferrid. cyanide
1-1 " " " "	2/3 full, marked, potassium permanganate X.H.5.O
1-1 " " " "	full, marked, wood tar
1-20 oz. " " " "	1/2 full, marked, carbonic acid C.P.
1-16 " " " "	3/4 full, marked, potassium ferrid. cyanide
1-20 oz. " " " "	1/3 full, marked, potassium ferrid. cyanide
1-20 " " " "	3/4 full, marked, acetate lead C.P.
1-20 " " " "	full, marked, stearic acid
1-20 oz. " " " "	full, marked, carbonate soda
1-20 " " " "	2/3 full, marked, (cannot read label)
1-20 " " " "	2/3 full, marked, (cannot read label)
1-20 " " " "	2/3 full, marked, (cannot read label)
1-12 " " " "	full, marked, zinc turn
1-12 " " " "	full, marked, metal cork
1-12 " " " "	full, marked, ammonia molybdate C.P.
1-12 " " " "	full, marked, oxalic acid 1.8.02.0.
1-12 " " " "	full, marked, sod. hyposulphate, C.P. 1/2
1-12 " " " "	full, marked, Ba It 2
1-12 " " " "	2/3 full, marked, salpho cyanide potass
1-12 " " " "	1/3 full, marked, phenotatthe alkaline
1-12 " " " "	full, marked, sodium phosphat C.P. 1/2
1-12 " " " "	full, marked, sodium succinate mark
1-12 " " " "	full, marked, potassium bisulphate mark
1-12 " " " "	full, marked, oil nigrabone
1-12 " " " "	1/2 full, marked, ammon. oxalate N.H.4.2.02.0.
1-12 " " " "	1/3 full, marked, sodium marked with x
1-8 " " " "	1/2 full, marked, (not labeled)
1-8 " " " "	3/4 full, marked, (not labeled)
1-8 " " " "	1/3 full, marked, carbonic acid
1-3 " " " "	full, marked, potassium nitrate C.P.

[PHOTOCOPY]

Material in box #2,

continued, #2.

1- 8 oz. glass bottle, full, marked, naphthalene,
1- 8 " " " 1/8 full, marked, potassium sulphate C.P.,
1- 8 " " " 2/3 full, marked, barium chloride, C.P.,
1- 6 " " " 2/3 full, marked, potassium Bi-chromate,
1- 6 " " " 1/3 full, marked, bromine,
1- 4 " " " full, marked, phenolphthalein mark,
1- 2 " " " 1/8 full, marked, poison Hg.,
1- 2 " " " 1/4 full, marked, mercury 1/2#,
1- 2 " " " 1/2 full, marked, calcium oxide,
1- 2 " " " 1/2 full, marked, barium acetate,
1- 2 " " " 3/4 full, marked, Pir 3-04 tabeiform M-n,
1- 2 " " " 1/8 full, marked, mercurous chloride,
1- 2 " " " 1/2 full, marked, sodium meta phosphate,
1- 2 " " " 2/3 full, marked, lactic acid,
1- 2 " " " 2/3 full, sodium nitrate,
1- 2 " " " 1/2 full, marked, copper oxide,
1- 2 " " " 1/8 full, marked arsenic acid,
1- 2 " " " 1/3 full, marked, waxier acetate,
1- 2 " " " 3/4 full, marked, cobalt chloride,
1- 2 " " " 1/4 full, marked, arsenous acid,
1- 2 " " " full, velva -- cine,
1 wood box, nitrate silver,
1- 8 gal. ling., containing 1 qt liquid, (not labeled)



ALLIS-CHALMERS
"FOUNDER"

ALLIS-CHALMERS CO.,

SUCCESSOR TO
THE EDWARD F. ALLIS CO., MILWAUKEE.
FRIGER & CHALMERS, CHICAGO.
DAYES IRON WORKS, CHICAGO.
EDGEMOND IRON CO., GASTONVILLE.

NEW YORK OFFICE,
Broad Exchange Bldg.

QUOTATIONS SUBJECT TO CHANGE WITHOUT
NOTICE. ALL AGREEMENTS AND CONTRACTS
UNDER SEVERAL AGREEMENTS AND OTHER DE-
TAILED, UNLESS OTHERWISE SPECIFIED BY THE
TERMS.
ALL CONTRACTS OR AGREEMENTS ARE SUB-
JECT TO THE APPROVAL OF AN OFFICER OF
THE COMPANY.
THE FURNISHING OF THIS LETTER INTENDED IN
OUR FIRM.

NEW YORK, Dec. 3rd, 1901.

Mr. Thomas A. Edison,
Orange, N. J.

Dear Sir:

On November 7th we had the pleasure of quoting you on
a small furnace with some fittings. Not having heard from you since
we would like to know if you still wish these quotations held open.

In going over our letter we notice a typographical error
which might possibly have some bearing on your not placing the order,
viz.: the three #3 slag pots should be quoted at \$72.00 instead of
\$725.00.

We also note that the price on the Green blower has been
given you as a price on a No. 1, while it is really the price of a
No. 2. We do not exactly know how this mistake occurred, but the
price on a No. 1 Blower should be \$190.00 instead of \$224.00.

Hoping that you will pardon these mistakes, and also
hoping to hear from you, we remain,

Yours truly,

ALLIS-CHALMERS COMPANY,

N. A. C.

Per

[Signature]

*Answered
Dec 12 - 1901*

*As you could not fill the
order in a reasonable time
I made over myself for about
1/3 of the money Edison*

[CA. 1901]

Give Ballant 55 Lamps for Lamp
bank - "Experiment Dundeland
Magneto Separator" - chq to
London Syndicate - 1087.

Full Address "Edison, N.Y. N.J."

SEP 12 1902

*From the Laboratory
of
Thomas A. Edison.*

Subject _____

Orange, N.J. Sept. 10th, 1902.

Mr. Thomas A. Edison,
Stewartsville,

N.J.

Dear Sir:--

Enclosed please find sketch of a special Fire Brick
of which Mr. Chapman wants 200.

Also find enclosed quotations from Sayre & Fisher Co.,
Sayreville, N.J. and Henry Maurer & Son, of New York, and also an
order for same, which please O.K. if it meets with your approval,
and return quotations with order and oblige,

Yours truly,

*Derroll
order*

F. B. Derroll

164

Malling better order the

(Enclosures)

*200 - say 225 for breakage
of Maurer - as he does best
work - Have them packed
in 66's - 5*

Lab. equip.

TYER RUBBER COMPANY

Manufactured Oct. 19/03

DRUGGIST'S RUBBER GOODS
AND
VULCANIZED RUBBER SPECIALTIES

FACTORY, ANDOVER, MASS.

SAMPLE ROOM
50 BROMFIELD ST. BOSTON.

TYERIAN
TRADE MARK
1856

MADE IN
ANDOVER
BOSTON
NEWTON
MASS.

Andover, Mass. U.S.A. Oct. 15, 1903

Mr. Thomas A. Edison,
Orange, N. J.

Dear Sir:- We are in receipt of your favor of the 12th. and enclose you herewith sample of the thinnest rubber tissue which we have made. This is about 6/1000 thick according to our estimate. It may be possible to get this down to a thickness of 3/1000 but it would be an experiment with us and would probably cost \$3.00 to \$5.00. In what quantities do you expect to use it? Of course if you could use in large quantities we would be glad to get it up for you, but if you only wish to use a few pounds you will readily understand it would hardly pay us to go to this expense. We do not believe it would be possible to get it down to less than 3/1000 of an inch. What width do you desire this? We should prefer not to make it over two feet in width, if we try it at all.

Awaiting your reply, assuring you if we can help you we will be glad to do so, we remain

Yours truly,

TYER RUBBER CO.

c/L

The sample sent is seven thousandths thick, we want it not more than three thousandths, we can use it in sheets as narrow as two and half inches wide - covered give twenty dollars for half pound of three thousandths - Can say how much we will need in future as it depends upon the exact conditions where we

get the three thousandths from



Mr. Thomas A. Edison,

Orange, N. J.

Andover, Mass. U.S.A. Oct. 22, 1907
Jesott

Dear Sir:- We duly received your favor of the 19th. and are sending you today about 1/2 lb. of tissue rubber, which as we estimate it, is between three and four thousandths. This you will note, has quite a number of small pin holes. You speak however, of using this in small pieces, and we believe it might be possible for your experimental purposes, to cut out what you needed from these pieces. If not, undoubtedly by preparing and selecting stock, we could make a sheet, free from all imperfections, but there would be a delay of probably two weeks in getting the same ready. We are accordingly sending this. If not satisfactory, kindly return, and we will make for you a perfect sheet. We should also be glad at the time to hear whether this meets with your requirements in every particular; that is, as to quality and thickness.

Yours truly,

C/E

TYER RUBBER CO.

H. Carlton.

*Answered
 Oct 29 1903*

[ATTACHMENT]



Tyer Rubber Co

Rubber received I find that the average Caliper is ~~4~~ four and a half thousandths. I am now using five thousandths and this is so slight a difference that the rubber sent will be of little value - Can't you manage to get it down to three thousandths per holes will not matter providing I can get ^{per} pieces of $1\frac{1}{2}$ inches in diameter that has none in. I will return the sample or you can bill it to me at regular - not the special price I offered for three thousandths.

Yours Truly
TAS

S. STERNAL
L. STRASSBURGER.

IF IT BURNS, ALCOHOL WE MAKE IT

NEW YORK & BROOKLYN
TELEPHONE CONNECTION.

CABLE ADDRESS
STERNAUCO, N.Y.

45-29-8

Cheating Devices,
Fancy Buttons,
Coffee Pots, Trays,
Bottle Caps, etc.

REPAIRS IN
Household
Articles
Hotel
Ware

FACTORY
185 PLYMOUTH ST.
BROOKLYN.

NEW YORK SAMPLE ROOM
200 CHURCH ST. COR. NASSAU ST.
SS/IRJ.



Brooklyn, N. Y. February 10, 1905.

Mr. J. F. Ott,
C/o Edison Laboratory,
Orange, N. J.

Dear Sir:-

Again referring to conversation had with your brother to-day, we are prepared to furnish you with the samples made of steel which you have left with us, making no charge for these samples, but there will be a charge of \$60. for tools to draw off the shell which you have left with us in brass.

If the steel will answer your purpose as well as the sterling nickel, it would, of course, not be advisable for you to make these out of sterling nickel.

If, however, you care to place the order with us for the 300 pieces Sterling nickel, we are willing on the initial order, to charge you only \$15.00 for tools, and 50¢ each for the 300 shells, subject to a further reduction provided we can see our way clear to do so after having made these up.

Awaiting your reply, we are,

"Sincerely,"

Yours very truly, *S. Sternal*

P. S. We will make you a price in steel, you to furnish the material, at 15¢ each in quantities of 300, and in larger quantities we believe the price could be reduced to about one-half, at least we should say, not less than one or two thousand at a time.

[ATTACHMENT]

Order 300 little cells of steel which
will work electrically & so on
we will furnish - The price
to be \$60 for tools & 15 c for each
cell, any further orders given
we are not to pay for more tools

Edison

Orange Co. N.Y. 11/85

Mr. Hearn
195 Clinton St.
Brooklyn

Dear Sir

You please order 300
shells as sample we sent
you herewith 4 1/2 in high 2 in
diameter at the price
you stated 10 cts a piece
and \$6.00 for tools, provided
there is no further charge
for tools, in placing a
second order. Please the
same to Edison Storage Battery
Co, please rush this

order as we are somewhat
poor the month of this

Yours truly

J. A. Edison

Per J. F. Ott

GEORGE MERCK

John - 29

WORKS:
ST. LOUIS
and
RAHWAY, N. J.

E. MERCK'S
DARMSTADT
LABORATORIES
Founded 1868

MERCK & CO.
MANUFACTURING CHEMISTS
NEW YORK,

June 1/05

*Answered
June 6 - 1905.*

Edison Storage Battery Co.
Orange
N.J.

Gentlemen:-

We thank you for your order of the 31st ult., which has had our prompt attention. We regret, however, that we were unable to include the 1 lb. Sodium Bincoxalate, as we do not carry the article in stock. Our Laboratories manufacture the article and we shall be glad to import it for you. Please advise us if we shall do so.

Yours truly,

Attested: *mm*

MERCK & CO.

*Bincoxalate is the acid oxalate,
(Salt of Sorrel) I find every
Drug store in Orange keeps it
in stock - Do you consider
it so rare that you have to
import it, Edison*

led - eq. m. p.
GEORGE MERCK

MERCK & CO.
MANUFACTURING CHEMISTS
NEW YORK.

June 7/05

WORKS,
ST. LOUIS
and
RAHWAY, N. J.

E. MERCK'S
DARMSTADT
LABORATORIES
Founded 1668

Mr. Thomas A. Edison

[Signature]
Orange,
N.J.

Dear Sir:-

Replying to your favor of the 6th instant, we would say that Salt of Sorrel (POTASSIUM BINOXALATE), having the formula $\text{KHC}_2\text{O}_4\cdot\text{H}_2\text{O}$, is an entirely different article from SODIUM BINOXALATE (Sodium Acid Oxalate), having the formula NaHC_2O_4 . As we advised you in our previous communication, we do not carry Sodium Binoxalate in stock, the article being in very limited demand, and we think there is some misunderstanding in your statement that you find it in every drug store in Orange. We shall, however, ^{still} be glad to import any quantity of the article that you may desire.

Awaiting your further advices in the matter, we are,

Yours truly,

Attested: *[Signature]*

MERCK & CO.

Henry S. Williams
N. Howland Brown
Morris Earle

Let - Egan



DEC 28 AM '90

Cable Address "Autograph"
Long Distance and Local Bell Telephone
Wabest 3-26
Keynote Telephone, Main 6-12

WILLIAMS, BROWN & EARLE

Departments

- No. 1. Engineering Instruments and Supplies
- No. 2. Spectacles, Eye Glasses and Thermometers
- No. 3. Photographic Instruments and Supplies
- No. 4. Photo Developing and Printing: Blue Prints
- No. 5. Stereoscopic and Projection Apparatus
- No. 6. Microscopes and Laboratory Supplies
- No. 7. Physical and X-Ray Apparatus
- No. 8. Scientific Novelties
- No. 9. Blank Books, Stationery and Draughting Room Furniture

Importers and Manufacturers of

Optical and Photographic Instruments and Supplies

918 Chestnut Street

Philadelphia, December 27, 1908

Specialties

W. H. & E. Field Glasses
Prism Binoculars
Oculists' Prescriptions for Glasses
Standard Thermometers and Barometers
Photographic Outfits and Supplies
Photo Developing and Printing: Picture Framing
Commercial Photography
Sole Agents for Kautel & Haer Co.,
and R. & J. Cook, London.

Mr. Thomas A. Edison,
Orange, N. J.

Dear Sir:

We are in receipt of your favor of the 26th inst. and beg to advise you that we can supply you with a Beck binocular microscope as illustrated in the catalogue, #156, but with plain square stage like #120. We have on hand a binocular microscope #156 with the circular stage, which we can offer to you with objectives 1", 2/3" and 1/8" and one pair of eyepieces at \$82.50. This instrument is in first class condition but is slightly shop-worn, and for this reason we have placed the extremely low price upon it. No carrying case is included.

Under separate cover we are sending you later copies of the Beck catalogue. To estimate costs of these instruments, count on the pound as \$7.60 and the shilling as 38¢.

We would attach a plain square stage to the instrument we have in stock without additional cost. There would be no substage appliances supplied.

We have on hand several thousand slides, covering all subjects and would particularly call your attention to our bo-

*Tell him to ship the
Binocular by express & FOR
will buy it if not will
return & pay all charges*

*also to be used the
3 Beck binoculars named*

S

Mr. Thomas A. Edison,

#2.

tanical specimens, list of which we enclose. We can supply this
set of forty-eight slides at \$15.00.

We trust that we may be favored with your order, to which
we can promise our prompt and careful attention.

Very truly yours,

Williams, Brown & Earle,

per 

Feb 24/1905
JAN - 2 AM
Henry S. Williams
N. Howland Brown
Morris Earle



Cable Address "Astragus"
Long Distance and Local Bell Telephone
Western 1-58
Keystone Telephone, Main 6-18

WILLIAMS, BROWN & EARLE

Departments

- No. 1. Engineering Instruments and Supplies
- No. 2. Spectacles, Eye Glasses and Thermometers
- No. 3. Photographic Instruments and Supplies
- No. 4. Photo Developing and Printing: Blue Prints
- No. 5. Stereopticon and Projection Apparatus
- No. 6. Microscopes and Laboratory Supplies
- No. 7. Physical and X-Ray Apparatus
- No. 8. Scientific Novelties
- No. 9. Blank Books, Stationery and Drafting Room Furniture

Importers and Manufacturers of

Optical and Photographic Instruments and Supplies

918 Chestnut Street

Philadelphia, Dec. 30, 1905. 190

Specialties

W. B. & E. Field Glasses
Prism Binoculars
Oculars' Prescriptions for Glasses
Standard Thermometers and Barometers
Photographic Outfits and Supplies
Photo Developing and Printing: Picture Framing
Commercial Photography
Sole Agents for Kautel & Esser Co.,
and R. & J. Beck, London.

Mr. Thomas A. Edison,
Orange, N. J.

Dear Sir:

We are in receipt of your favor of the 28th inst. and have forwarded by express the Beck Binocular microscope together with objectives as per our quotation of the 27th inst.

In assembling this instrument we have included a mirror should you at any time desire the instrument for reflected light. The 1/2" objective supplied is of the better grade Beck series, having a large aperture and it is invaluable for binocular work.

We trust that the instrument will arrive safely and prove satisfactory.

Very truly yours,

Williams, Brown & Earle,

per *[Signature]*

*The microscope arrived
all right - send another just
like it with 1/2 inch and 2/3
objectives - send also
for both a good
fore and back
tag*

Sub-eying

Telephone Nos. { 1507
1508 Madison.

W. H. SPELMAN,
A. R. BLAIR,
W. H. SPELMAN,
Contractor for Plumbing,
130 WEST 29th STREET,
WORK DONE IN ANY PART OF THE U. S.

B.T. Quinn
DEC 21 1899

NEW YORK,

December 19, 1901

*Day I am out of
Commenced by
now can go into
Chambers*

Mr. Thomas Edison,

Llewellyn Park, Orange, N. J.

Dear Sir:-

I take the liberty of enclosing you a blue print in connection with a resisting manhole frame and cover. The cut shows a style of manhole which will resist surface water. The Interborough R. R. Co. has one in place at Fifty-eighth Street near Ninth Ave., New York City, and think very well of it, and we have endorsements from two other Companies in Massachusetts.

The N. Y. Edison Co. has one in their Yard at Forty-first St. and East River, delivered at the request of Mr. Stephenson, Engineer, of the Duane St. office.

I have taken the liberty of communicating with you and enclosing you this print, and can refer you to any of the leading Engineers in New York City as to my standing. I would like very much indeed to take this matter up with you at your convenience, as I am firmly convinced it is indispensable.

We have other data which might be interesting to you. I would like very much to hear from you.

Yours truly,

W. H. Spelman

Lab. Equip. Still



Eimer & Amend,
MANUFACTURERS & IMPORTERS OF
CHEMICALS AND CHEMICAL APPARATUS.

WHOLESALE **DRUGS** RETAIL

205 to 211 THIRD AVE.
CORNER OF 187th ST.

#5

New York, June 3, 1908.

Received
JUN 4 - 1908

Mr. Thos. A. Edison,
Orange, N. J.

Dear Sir:

The Jewell Water Improvement Company of Chicago, informed us that they wrote you on the 29th ult., quoting on their Jewell Steam Still #430, 10 gallons per hour, and #440, 15 gallons per hour. We wish to state that we are the eastern agents for the Jewell Water Improvement Company, and should you decide to place an order for either of these stills, we should be pleased to receive same. We quote you the same price as the Jewell Water Improvement Company, and trust we may be favored with your order, which shall have our prompt attention.

Very respectfully,

EIMER & AMEND,

per R. M. Miller

S.U.

Your quotations were quite different from Jewell's so high we decided to construct a still of our own

JAE

No. 14456 *lab-equip*

CONTRACT.

NEW YORK.

Nov. 5, 1908.

SOLD TO Thomas A. Edison, Esq.,
Orange, N.J.

Ans 11/7
108

100 lbs. Block Balata Rubber, ex store, @ 42¢ per lb.

Terms: Net cash in ten days from date of delivery here. Payable
in New York or Boston funds.

GEO. A. ALDEN & CO.

per Chas. Edward.

*ask him to hurry shipment
as I want to try an experiment at a mill
which shuts down for 2 months
within 8 days — E*

605 DUN BUILDING.
290 BROADWAY.

December 21st, 1908

Mr. P. Brady,
Laboratory.

Dear Sir:

You recently sent me requisition covering 2,000 time sheets for the Laboratory. I sent the requisition for printing them to the Essex Press of Newark, stipulating that it was to be billed at \$2.35 per thousand. They have just replied that it will be impossible to fill the order on this basis and that their charge for 2,000 will be \$5.75.

You undoubtedly appreciate that the price of \$2.35 per thousand which I gave you over the telephone recently covered 5,000 copies of the Time sheets for the Edison Storage Battery Company. The increase in the Essex Press price is due to the decreased quantity.

Kindly advise me whether I shall fill your order at \$5.75.

If you can use 5,000 copies of the form we will be glad to furnish them for \$10.75.

Yours very truly,
L. W. McPherson

AMZ

612
5000
PB

NATIONAL PHONOGRAPH COMPANY

Catalogue.

April 5th.1909.


The Concrete Steel Co.,
29 Broadway,
New York City.

Gentlemen,---

We would be pleased to receive your catalogue
and further literature you have published concerning
reinforced concrete, etc.

We are the engineers for the Edison One Day
House, designing and experimenting with the view of
realizing Mr. Edison's idea, and naturally are interested
in anything pertaining to Concrete Construction.

Yours very truly,



Mech. Eng'r.

Address:

Messrs. Henry J. Harms, Jr. & George E. Small, Mech. Eng'rs.
Room # 31, Edison Laboratory,
West Orange, N.J.

HJH/JCH.

ALL AGREEMENTS SUBJECT TO DELAYS CAUSED BY FIRES, ACCIDENTS,
STRIKES OR OTHER CAUSES BEYOND OUR CONTROL.

CABLE ADDRESS: CONSTEEL.

THE CONCRETE-STEEL COMPANY



HAVEMEYER STEEL BARS FOR REINFORCING CONCRETE

DESIGNS
SPECIFICATIONS
ESTIMATES

20 BROADWAY, NEW YORK

April 7th 1909.

Mess. H. J. Harms, Jr. & G. E. Small, Mech. Eng.,
Room #31, Edison Laboratory,
West Orange, N. J.

Dear Sirs:-

Replying to yours of the 5th inst., we are pleased to send you under separate cover a catalogue and other printed matter descriptive of the Havemeyer Bar, which we would be glad to have you consider in connection with the work you have in prospect.

You will find these bars the most economical for use in concrete construction. They have a uniform cross section, no metal being wasted in securing the strongest possible mechanical bond. They will bend readily in any desired angle and can be easily measured. Our bars are rolled from the very best quality new billet steel.

If there is any further information you desire, please call on us.

Very truly yours,

THE CONCRETE-STEEL COMPANY.

J.F.H. R.

J.F. Havemeyer
President.

NATIONAL PHONOGRAPH COMPANY

Quotations.

July 11th. 1909.

Chicago House Wrecking Company,
West 35th. & Iron Streets,
Chicago, Illinois.

Gentlemen,---

Received your letter with inclosure, and have gone over same carefully.

Wish to say that we cannot place order with return mail as you expect. We are now completing the moulds, etc for the model house and will equip this complete for exhibition. It is only after actual building operations commence, that orders can be placed. The operation will not stop with 100 houses but will acquire, very soon, gigantic proportions; we want to know beforehand, what the house will cost, complete, and on account of the very large number required of everything, expect rock bottom prices, and your price seems to high yet.

As stated before, this whole matter is in experimental stage yet, and we are just beginning to study up different things connected with it. If we cannot buy heating plant and plumbing at better prices, we simply will manufacture them ourselves.

Yours very truly,

RJH/JCH.

Mechanical Engineer.

REGISTERED MAIL

JOSEPH O. KIESLIGH,

PAINTER AND DECORATOR,

REMOVED TO 315 W. 35th ST.
PHONE 1771 38th ST. 462 EIGHTH AVENUE.

Estimates Furnished.

New York, July 21st 1909

Mr George E. Small
Dear Sir:

I saw a cut of
The Edison Cement houses in The
Sunday Review and was so
taken up with the idea that I
thought of having one built for
myself. I spoke to Mr. Morris of
The Edison Cement Co at 1133 Broadway
and asked him the particulars
of the house. He referred me
to you and told me that you
would give me all information
as if you could be kind enough
and give me particulars and put
me on the way of having one built
I would be very thankful to you.
I have a piece of ground 40 x 100
in Flatbush South Brooklyn
one of the finest parts on Ocean Ave.
and Kings Highway about 1/2 mile
this side of Sheepshead Bay Race Track

100 BROADWAY, NEW YORK, N. Y.

JOSEPH O. KIESLICH,

PAINTER AND DECORATOR,

REMOVED TO 315 W. 35th ST.

PHONE 1771 38th ST. 462 EIGHTH AVENUE.

Estimates Furnished.

New York, _____ 190

The ground is of the finest
Red Sand procurable which
I understand is an item in
the mixture as that end of it
is in my favor
Trusting you will be kind
enough to give me the above
information and thanking you
in Advance

I Remain
Respectfully
Joseph O. Kieselich

ES DEPT.

ALL ORDERS ACCEPTED AND CONTRACTS MADE ARE SUBJECT TO DELAY OR REJECTION BY OTHER, FIRM OR OTHER UNANTICIPATED CAUSE.
ALL QUOTATIONS ARE MADE CONDITIONAL UPON OUR CORRECTION OF STENOGRAPHIC ERRORS.

CAPITAL STOCK AND SURPLUS
\$1,000,000.00

CHICAGO HOUSE WRECKING CO.

WEST 32ND & IRON STREETS
GENERAL MERCHANDISE, SHERRIFFS, RECEIVERS, & MANUFACTURERS' SALES



CABLE ADDRESS
"WRECKING" CHICAGO
A.B.C. CODE

OUR PLANT COVERS 20 ACRES
WE BOUGHT THE FIFTY MILLION DOLLAR LOUISIANA PURCHASE EXPOSITION

TELEPHONE YARDS 1909.

IN REFERENCE TO THIS LETTER MENTION

CHEM. STENOGR. I.M. CHICAGO, U.S.A. July 22, 1909.

Geo. E. Small & Henry J. Harms, Jr., Mech. Engs.

Room #31, Edison Laboratory,

West Orange, N. J.

Dear Sirs:-

Replying to yours of the 11th inst. We think we will be able to get this price on the complete steam heating plants for this building down to.....\$200.00 per plant, F.O.B. cars Chicago, as outlined and covered by the specifications submitted you in our last letter. This, you understand includes the plant complete and all brand new material. This of course on condition that you will place orders in quantities as given in your letter, that is by the hundred.

In regard to all of the Plumbing Material, we also wish to advise that we think we will be able to get this plant down to something like \$75.00, including all the material to complete the entire installation of the material above the ground line. This price is also F.O.B. cars Chicago and is based on orders in large quantities, as mentioned in your letter.

However, before lining up any kind of exact proposition on this, we think we would prefer to have a little further suggestions from you, as to what your own tastes in the matter are. Go over our catalog carefully and make a selection from the various plumbing fixtures listed and give us some sort of line on what kind of fixtures you think would be the most suited for these houses. If you will make up a list in this way, we will be glad to make you our bedrock figures on the complete equipment and give you quotations on orders in various quantities.

Let us know if you would insist on using absolutely "A" grade plumbing fixtures; or, if you would consider using fixtures that are slightly damaged in the enamel, which we will carefully repair. Fixtures in this class, we could make you a very low price on and at the

42
same time you would be getting fixtures that would present a very expensive appearance and you would of course get a much better quality all the way through with the exception of the slight blemishes in the enamel, which, as before explained we repair as careful as it is possible for us to do so and in most cases, these defective places can scarcely be noticed. We guarantee these fixtures to be for all practical purposes, as good as strictly "A" grade fixtures in every way.

These fixtures, you understand are what is known as "B" grade fixtures. They are absolutely brand new fixtures, having never seen any service whatever, but they probably received some slight defect or rough handling in shipment and we classify them as "B" grade,

We of course can furnish you strictly "A" grade fixtures if you want them. We simply called this matter to your attention so that you would know all the facts and you can advise accordingly.

We trust you will let us hear from you again in the matter as soon as you are ready to take action and we assure you we will be glad to make you the very lowest price we possibly can.

We would like to be gavored with some of this business. Our latest general catalog and our special heating catalog are being mailed to you under separate cover.

Yours very truly,

CHICAGO HOUSE WRECKING CO.

Lab. equip

ESTABLISHED 1815.

ARNOLD, HOFFMAN & CO., INC.
PROVIDENCE, NEW YORK.
BOSTON, PHILADELPHIA &
CHARLOTTE, N.C.
U.S.A.

EDWARD E. ARNOLD, PRES.
WILLIAM H. HOFFMAN, TREAS.
HENRY A. HOFFMAN, SEC.

IMPORTERS OF

INDIGO, DYE-STUFFS,
STARCHES, GUMS.

HAROLD M. HALL
Sole Agent
MANAGER.

*Says we are not through
our experiments & can only
take care of some in small amounts this?*

At date he asks for from

Mr. Thomas A. Edison
Orange, N.J.

Groveley

*Mr. Edison
Do you want to*

H. J. Hall

Feb. 28th, 1910 (HS)

Dear Sir:

Referring to shipments of

Liquid Chlorine

from the Castner Electrolytic Alkali Co., Niagara Falls, N.Y., for whom
we are selling agents, they request that you place a standing order with
them covering your probable requirements so that they can arrange to
take care of these regularly. We understand they will be about 2 drums
a week for the present.

Regarding the cylinders, they state that these are somewhat
different from those they use and they do not know what their capacity
is. If possible, will you please advise them about what ~~capacity~~ ^{pressure} the cyl-
inders are to be charged. If you have not a record of the pressure,
please advise them what weight of

Liquid Chlorine

these cylinders would contain when you received them originally from
abroad.

We regret having to trouble you, but the works need this infor-
mation which we trust you will be able to furnish them.

Awaiting your reply, we remain,

Yours truly,

Arnold, Hoffman & Co., Inc., Agents.

Harold M. Hall

Lab. Equip



TRADE MARK
Main Office and Factory: Camden, N.J.
SAN FRANCISCO, 24 Beale Street

LONG DISTANCE TELEPHONE

The New Jersey Asbestos Company

Manufacturers
of all Kinds of

ASBESTOS GOODS

59-61 PEARL STREET

NEW YORK July 23, 1910.

Thomas Edison, Esq.,

Orange, N. J.

Dear Sir:-

We are in receipt of your phone message, requesting us to forward you 5 oz. samples of all the grades of Ground Asbestos Asbestos Fibre which we handle.

The field for supplying you with these samples, is so large, that we would ask you to kindly give us some idea as to what you want to use this material for, and we think we will be able to send you samples of Asbestos which will be a good deal more useful to you, than if we sent them at random.

Thanking you for your inquiry, we remain,

Yours very truly,

The New Jersey Asbestos Co.

N. Y. Manager.

Ans 7/27/10
We want plain asbestos of different grades a piece ground up but not put into any trade shape

A. L. Fitzlibby
N. Y. Manager

PATENT SERIES

The Patent Series for 1899-1910 consists of: (1) one caveat (preliminary patent application) from 1907 relating to Edison's concrete house; (2) numerous case files for Edison's U.S. patent applications; and (3) a patent application book containing summaries of specifications by Edison and other laboratory employees for the period 1909-1912.

The Patents record group at the Edison National Historic Site includes an extensive set of case files relating to Edison's foreign patent applications. In addition, there are numerous patents by other inventors, many of which were subsequently assigned to Edison's companies. A finding aid is available. A related set of case files for Edison's U.S. patents can be found in the National Archives (Record Group 241, Records of the Patent Office). A complete set of the 1,093 U.S. patents issued to Edison appears in *Thomas A. Edison Papers: A Selective Microfilm Edition, Part I*, reels 1 and 2.

Numbering Systems for Edison's Patent Applications

Folio Numbers. These numbers were assigned by patent attorneys Richard N. Dyer and Frank L. Dyer and by the various Dyer partnerships to applications filed on behalf of Edison and other clients. Folio numbers generally appear on the upper left corner of the application covers. They can also be found on other patent-related documents such as Patent Application Book, PN-09-01-21. There are two series of folio numbers: one beginning in the 1880s and continuing through 1901; the other beginning in the early twentieth century and continuing into the 1930s.

Edison Case Numbers. These numbers, which are often preceded by the letter "E," were also assigned by Edison's patent attorneys, beginning in the late 1870s. Unlike the folio numbers, the case numbers were used exclusively for Edison's applications. Case numbers generally appear on the application covers and can also be found on other patent-related documents such as the patent application casebooks published in *Thomas A. Edison Papers: A Selective Microfilm Edition, Part II*. The case number system was discontinued in 1905.

Serial Numbers. These numbers were assigned by the U.S. Patent Office to applications filed by Edison and other inventors. A new sequence of numbers was used for each year. Serial numbers generally appear on the upper right corner of the application covers and on the correspondence between Edison's attorneys and the Patent Office. They can also be found on other patent-related documents such as Patent Application Book, PN-09-01-21.

Patent Numbers. These numbers were assigned by the U.S. Patent Office to successful applications by Edison and other inventors at the time the patent was formally issued.

Caveats

Until 1910 the U.S. Patent Office permitted an inventor to file an official notice regarding work in progress. Caveats were valid for one year and could be renewed from year to year upon payment of a fee. If another inventor subsequently filed an application for a similar invention, the first inventor was so notified. Although Edison filed numerous caveats during the 1870s and 1880s, there is only one extant caveat from the period 1899-1910.

The caveat, which was executed on November 27, 1907, is entitled "Cement Buildings and Process of Constructing the Same." In addition to the typed specifications, the folder contains a draft in Edison's hand; two blueprint drawings; and a published letter to the *Scientific American* by H. J. Le Comte, an inventor who claimed to have anticipated Edison's idea for a concrete house.

Folio No. **355**

Alvord
Serial No.

Applicant.

Address.

Thomas A. Edison *Llewellyn Park*

Title *Cement Building & Process of Constructing the Same*

Filed *November 29, 1907* Examiner's Room No.

Assignee

Ass'g't Exec. Recorded Liber Page

Patent No. Issued

ACTIONS.

1	<i>the 4th</i>	16
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PAULT

FRANK L. DYER,

Counsel,

ORANGE, NEW JERSEY.

first in
cost for
Cement Houses

Concise

Received
Nov 14/07
S. L. D.

The object of this invention is to mould a complete dwelling
at one operating, the sides, roof, partitions and floors being integral
when furnished - the interior with its staving, mantle, ornamental
carving all integral & made at the same time - thus cheapening enormously
the cost of dwelling as well as the beautifying beyond anything now possible in
so cheap a manner -

The invention consists in erecting a complete house of cast iron, formed of
removably connected sections bolted & dovetailed together. The whole
forming a mould within, ~~and~~ ^{which} ~~is~~ ^{is} ~~filled~~ ^{filled} ~~with~~ ^{with} ~~concrete~~ ^{concrete}
mixture especially adapted for this work is raised to the top
of the iron mould forming the house & by means of many distributing
troughs leading from a central point it made to flow evenly
the whole of the top & distribute the mixture evenly thus preventing
segregation of the components of the mixture - and containing
the elevating of the concrete within until the whole iron mould
forming the complete house is filled to the highest point -
an extension called a riser going to a higher point -

The invention further consists in placing in the space between
the iron mould, steel rods for reinforcing the concrete, such
rods being held in position by removable fingers connected
to the iron frames.

The invention further consists in providing numerous air
vents closed by filter cloth upon screens of coarse mesh so that
during the pouring of the concrete where it flows through
partitions, floors or other tortuous channels air will not
be trapped at different points to produce defective results

The invention further consists in various details of the mould
the assembling to form the complete house ~~which will~~
be understood unless of another application.

P E T I T I O N

TO THE COMMISSIONER OF PATENTS:

YOUR PETITIONER, THOMAS A. EDISON, a citizen of the United States, and a resident of and having a Post Office address at Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, represents that he has made certain improvements in CEMENT BUILDINGS AND PROCESS OF CONSTRUCTING THE SAME, and that he is now engaged in making experiments for the purpose of perfecting the same preparatory to applying for Letters Patent therefor. He therefore prays that the accompanying description of his invention may be filed as a caveat in the confidential archives of the Patent Office, and he hereby appoints Frank L. Dyer (Registration No. 560), of Orange, New Jersey, his attorney, with full power of substitution and revocation, to transact all business in the Patent Office connected therewith.

Thomas A. Edison

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN, that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, have invented an improvement in CEMENT BUILDINGS AND PROCESS OF CONSTRUCTING THE SAME, and desiring further to mature my said invention, file this my caveat therefor and pray protection of my right until I shall have matured my invention.

The object of my invention is to construct a building of a cement mixture by a single molding operation; all its parts including the sides, roof, partitions, bath tub, floors, etc., being formed of an integral mass of a cement mixture. This invention is applicable to buildings of any sort but I contemplate its use particularly for the construction of dwellings in which the stairs, mantels, ornamental ceilings and other interior decorations and fixtures may all be formed in the same molding operation and integral with the house itself. A house thus made is practically indestructible and is much more sanitary than houses as now constructed, and at the same time the cost of construction may be enormously decreased, and it is feasible to beautify such a house far beyond anything now possible in so cheap a manner.

To carry out my invention I first construct a complete double-wall house which forms a mold for the reception of the cement mixture. This mold is preferably constructed of cast iron sections removably connected together in any suitable manner, as by means of bolts, dowels,

eto., and adapted when the house is constructed and the cement, ^{mixture} has hardened, to be taken to pieces and removed and used repeatedly for the construction of an indefinite number of houses. When the mold has been constructed and erected I connect a number of distributing pipes therewith, which are preferably arranged at regular intervals at the top of the mold, the said pipes being connected to a common source of supply which may conveniently consist of a vertical riser having a funnel shaped opening for the reception of the cement mixture. I preferably use for the molding operations, a cement mixture formed of crushed stone, quartz or similar materials having particles varying from one-fourth to one-half inch in diameter, say five parts; ordinary sand, say three parts, and Portland cement, say one part, although these proportions may be considerably varied. Enough water is used to form an emulsion having sufficient fluidity to flow readily to all parts of the mold. During the setting of the mixture the water enters into chemical combination in the usual way, and if any surplus water is present it will appear as a mere dampness which quickly dries out. In order to prevent settling of the crushed material during the molding operation and before setting commences, and the resulting objectionable segregation of the ingredients, I find that by adding a comparatively small amount of fine clay to the mixture (say 20% of the cement used) the tendency to settling is greatly diminished, while at the same time the amount of water used is sufficient to give a high degree of fluidity to the emulsion and permit very successful molding. The cement being properly mixed is elevated by any suitable means, and poured into the funnel shaped open-

ing in the riser, whence it is evenly distributed by the pipes to the different parts of the mold which is gradually filled up as the cement is poured in.

To guard against the trapping of air and consequent imperfections in the molded cement when finished, I provide at various points in the molds where air is likely to be trapped, as for example, in the floors and partitions, and wherever the cement has to flow through tortuous channels, a number of air vents which will allow the escape of the air but will prevent the escape of the cement. One way in which I may construct such air vents is by making openings in the molds which are closed by an outer screen, such as a coarse wire mesh, and an inner lining of filter cloth, through which the air may readily escape but through which the cement cannot pass. Other forms of vents may, of course, be used.

While a house of this character may be made of cement mixtures alone, a much better and stronger house may be constructed if the structure is reenforced with properly formed metal reenforcing rods. Such rods, if used, may be secured to the molds in any way that will afford proper support to the rods during the molding process, and which will not prevent the removal of the mold sections after the house is completed.

In the accompanying drawing forming a part hereof, I illustrate my invention so far as it is at present completed, Figure 1 being a cross-sectional view of a mold prepared for the reception of the cement which is to form my improved house; Figure 2, a plan view of the same, and Figure 3 a cross-sectional view of one form of air vent.

The house which I have illustrated comprises a basement, two stories and a roof. 1, 1 are the molds having spaces 2 between them for the reception of the ce-

ment mixture; 3 indicates the air vents which I have shown placed only in the floors, but additional vents will of course be placed wherever it is desired to avoid the trapping of air. The vents as shown in the drawings comprise flanged openings 4 in the mold sections, these openings being closed by means of a coarse outer mesh 5 and a fine inner mesh 6 which may conveniently be made of filter cloth. The reinforcing rods are shown at 7 and are so positioned in the molds that they will give the greatest strength to the finished house. I have shown these rods supported in place in the molds by means of short sections of wire 8 wrapped about the rods, the ends of the wires abutting against the inner walls of the molds, or extending through the molds, but any convenient supporting means for these rods which will allow the removal of the molds when the house is finished may be used.

The hollow riser 9 is connected to the top of the mold by means of pipes or troughs 10, and when the cement mixture is placed in this riser it will be distributed by the pipes to all parts of the mold. I contemplate using the sand which is removed in digging the cellar, in connection with Portland cement for forming the desired mixture, thereby very materially reducing the cost of construction. Openings are preferably made along the upper surface of the side and end walls, as at 11, through which long poles may be passed, so that during the filling operation these poles may be moved up and down, with a pumping motion, to better distribute the cement mixture throughout the mold, and do away to a large extent with the possibility of an imperfect casting and the formation of air bubbles.

My invention comprises specifically:

A cement house constructed as hereinbefore set forth.

An integral cement house molded at a single operation.

The process of constructing a house which consists in making hollow molds of all its parts and pouring a cement mixture into these molds to mold a house at a single operation.

The process of making a house which consists in setting up hollow molds for all its parts, arranging reinforcing rods between the molds, pouring a cement mixture into the molds from the top thereof to form an integral reenforced cement house and thereafter removing the molds.

A mold section having an opening therein, closed by an outer layer of coarse mesh and an inner layer of fine mesh.

IN WITNESS WHEREOF, I have hereunto signed my name, this *twenty ninth* day of November, 1907.

Thos A Edison

In presence of:

Frank Dyer

Anna R Klehm

O A T H .

State of New Jersey, }
County of Essex. } ss:

THOMAS A. EDISON, the above named petitioner, being sworn, deposes and says that he is a citizen of the United States and a resident of Llewellyn Park, West Orange, in the County of Essex and State of New Jersey, and that he verily believes himself to be the original and first inventor of the improvements in CEMENT BUILDINGS AND PROCESS OF CONSTRUCTING THE SAME, described in the annexed specification.

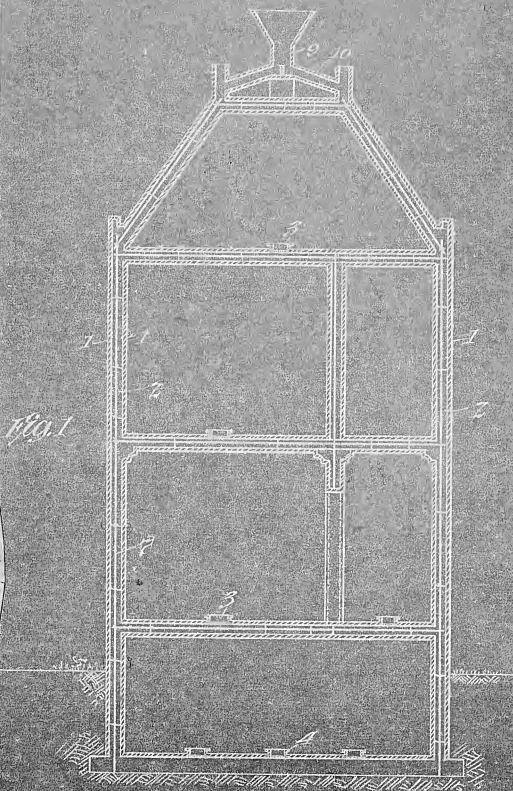
Thomas A. Edison

Sworn to and subscribed before me

this 27th day of November, 1907.

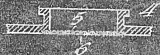
(Seal)

H. H. Dyke.
Notary Public.



Witnesses:
 Isaac C. Davis
 J. H. Dyke

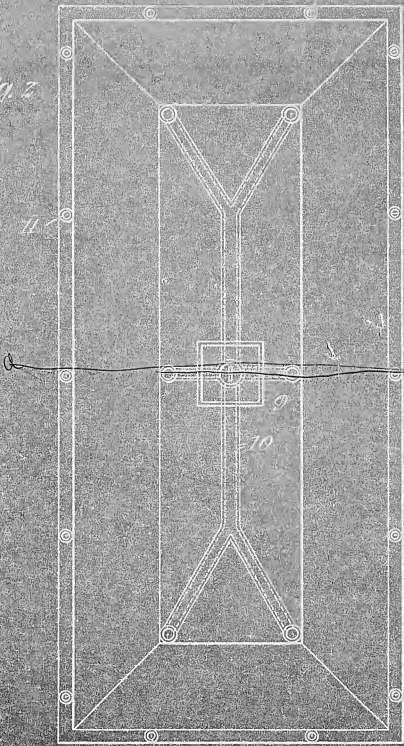
Fig. 3



Inventor

Thomas B. Eason
 By Bernard L. Bunn
 Att.

Fig. 2



Witnesses:
 Frank B. Rouse
 H. A. Dyke

Inventor:
 Thomas A. Edwards
 by George L. Brown
 Att'y

**An Inventor Who Claims to Have Anticipated
Mr. Edison's Concrete House Idea.**

To the Editor of the SCIENTIFIC AMERICAN:

In No. 28, vol. xxvii, November 14, 1907, of SCIENTIFIC AMERICAN, I saw an article bearing the heading "Edison System of Concrete House." After reading over the article, I notice that this system consists in the use of concrete pumped into adequate molds, same being spoken of as a new invention.

I must state, however, that the said process is not novel, as under date of December 14, 1901, patent No. 2498 was granted to me by the Mexican government covering a new process of manufacturing and building houses or the like in one piece, by means of specially designed molds that let the air escape. The same patent was improved on the 23d of March, 1903, under No. 3502 Mx.

My system is still simpler than Mr. Edison's, as the mixer is suppressed.

I therefore claim as my own the prime idea of manufacturing concrete with a pump into adequate molds, this process being useful for the making of industrial products of every kind and description as well as for building houses, etc.

This invention might cause a revolution in the art of building, as construction may be carried out by the use of small pieces of material twrapped in a centhird mass playing the part of cement, with the object of uniting said material. The addition of iron wire or armature is a factor of security to the rigidity of the products thus obtained.

I am still further improving my process so as to make it more practicable.

H. J. LECHE.

Mexico, November 25, 1907.

See Am. Sci. Rev.

Patent Application Files

These files consist of formal patent applications, along with correspondence between Edison's attorneys and the U.S. Patent Office. Some of the folders also contain notes and drawings by Edison; draft specifications in Edison's hand and other specifications with Edison notations; memoranda from Edison to his patent attorneys; and related correspondence authored by or sent to Edison, his associates, and his companies. Included are applications pertaining to phonographs and phonograph records, motion pictures, storage batteries, ore milling, cement, and concrete buildings. There are also a few applications relating to electric lighting, telephones, telegraphs, and other subjects such as "flying machines."

Another set of application files for Edison's U.S. patents can be found in the National Archives (Record Group 241, Records of the Patent Office). The National Archives set is nearly complete and available on microfilm. For that reason, the formal specifications and the correspondence between Edison's attorneys and the Patent Office have not been selected in the case files for the successful applications in the Edison National Historic Site's collection. The selected material from these files consists primarily of notes, drawings, and draft specifications by Edison, along with occasional correspondence to or from Edison, his associates, and his companies. The case files for Edison's abandoned or forfeited applications have been selected in their entirety except for duplicates, printed patents by Edison and other inventors, and other printed material. In addition, two applications by Edison's son, William Leslie Edison, have been selected.

The files are arranged in chronological order according to execution date—the date on which the formal application was signed and witnessed. On the list that follows, each selected application file is noted with its execution date; folio number; patent number (for issued patents) or serial number (for abandoned applications); and case file title. In a few cases where the execution date could not be determined, the application date, if known, or other conjectured date is supplied in brackets. Case files consisting entirely of unselected material do not appear on the list.

Exec. Date	Folio #	Ser. # or Pat. #	Abbreviated Case File Title
02/06/99	2230	Pat. 663,015	Electric Meters
02/06/99	2231	Pat. 648,934	Screening or Sizing Very Fine Material
02/24/99	2242	Pat. 643,764	Reheating Compressed Air
04/10/99	2236	Pat. 641,281	Expanding Pulleys
06/21/99	1	Ser. 722,229	Fine Screening Plates
07/05/99	3	Ser. 724,246	Combustible Engines
08/22/99	2298	Ser. 729,121	Bricking Pulverized Material
09/12/99	2302	Ser. 731,137	Phonographs
09/12/99	2303	Pat. 652,457	Phonographs
10/20/99	2310	Ser. 734,695	Conveying Belts
10/28/99	2316	Ser. 736,350	Drying/Screening Ores or Other Material in Bulk
[ca. 1899]	2277	[dropped]	Portland Cement
01/03/00	2333	Ser. 823	Magnetic Separation
01/03/00	2334	Ser. 824	Magnetic Separators
01/03/00	2335	Ser. 825	Drying/Screening Ores and Other Materials in Bulk
01/24/00	2342	Ser. 3,456	Fine Screening Plates
03/28/00	2369	Ser. 12,069	Stock Houses for Storing Material in Bulk
04/10/00	4	Pat. 759,356	Burning Portland Cement
04/10/00	5	Pat. 759,357	Burning Portland Cement
04/30/00	2379	Pat. 657,527	Metallic Duplicating Phonograph Records
04/30/00	2383	Pat. 667,662	Duplicating Phonograph Records
05/15/00	2386	Ser. 20,556	Coating Phonograph Records or Other Articles
09/28/00	2430	Pat. 703,051	Electric Meters
12/21/00	2452	Ser. 41,373	Reversible Galvanic Batteries
[ca. 1900]	2469	[not filed]	Storage Batteries
02/23/01	2486	Ser. 49,453	Reversible Galvanic Batteries
02/23/01	2493	Ser. 52,926	Electrodes for Galvanic Batteries
05/07/01	2516	Ser. 59,512	Depolarizers for Reversible Galvanic Batteries
06/17/01	2536	Pat. 692,507	Reversible Galvanic Batteries
[ca. 1901]	2608	[not filed]	Electrolytically Active Finely Divided Iron
04/05/02	13	Ser. 102,109	Nickel-plating Articles
[06/04/02]	14	Ser. 110,159	Making Sound Recordings
[06/04/02]	15	Ser. 110,160	Sound Records
09/30/02	18	Ser. 229,245	Reversible Galvanic Batteries
10/13/02	19	Pat. 727,118	Electrolytically Active Finely Divided Iron
11/13/02	22	Pat. 852,424	Storage Batteries

11/13/02	27	Pat. 802,631	Burning Portland Cement Clinker
11/13/02	28	Ser. 134,018	Portland Cement
12/18/02	29	Pat. 750,102	Electrical Automobiles
12/18/02	30	Ser. 138,428	Separating or Grading Apparatus
12/18/02	34	Pat. 1,014,818	Giant Rolls
02/16/03	42	Ser. 147,587	Storage Battery Charging Apparatus
04/27/03	46	Pat. 775,965	Dry Separators
05/25/03	48	Ser. 159,307	Dry Separators
07/20/03	54	Pat. 775,600	Rotary Cement Kilns
07/20/03	55	Ser. 166,520	Duplicating Tubular Sound Records
07/30/03	57	Ser. 167,929	Screening Plates
08/11/03	59	Ser. 169,334	Electromagnets for Magnetic Separation
08/25/03	60	Pat. 772,648	Vehicle Wheels
10/03/03	65	Pat. 850,912	Making Articles by Electroplating
11/02/03	69	Ser. 179,716	Duplicating Phonograph Records
11/11/03	70	Pat. 962,081	Recording Sound
11/11/03	71	Ser. 180,999	Recording Sound
11/16/03	72	Pat. 943,664	Sound Recording
11/20/03	74	Ser. 182,427	Primary Batteries
11/20/03	76	Ser. 182,428	Reversible Storage Battery
11/20/03	77	Pat. 873,220	Reversible Storage Battery
06/20/04	87	Pat. 861,241	Portland Cement
07/12/04	107	Pat. 847,746	Electrical Welding Apparatus
07/12/04	109	Ser. 217,881	Perforated Sheet Metal for Storage Batteries
08/23/04	113	Pat. 970,615	Sound Records
09/26/04	120	Ser. 226,776	Treating Graphite for Use in Alkaline Storage Batteries
01/16/05	126	Ser. 243,492	Sound Records
03/17/05	136	Ser. 251,001	Nickel-plated Graphites
03/29/05	144	Pat. 882,144	Storage Battery Electrode
04/11/05	149	Ser. 255,079	Sound Recording Apparatus
04/26/05	154	Ser. 257,943	Electrode Unit
05/20/05	169	Ser. 261,953	Phonographic Recorders
05/20/05	170	Ser. 261,949	Methods of Recording Sound
05/20/05	171	Pat. 963,362	Recording and Reproducing Sound
09/28/05	190	Pat. 1,152,613	Burning Portland Cement Clinker
10/11/05	193	Ser. 282,694	Cement Kilns
[10/19/05]	197	Ser. 283,529	Production of Thin Sheet Metal
11/28/05	209	Ser. 290,336	Making Metallic Films or Flakes
12/06/05	211	Ser. 290,712	Storage Battery Receptacles

12/06/05	212	Pat. 914,342	Storage Batteries
01/09/06	217	Pat. 858,862	Primary and Secondary Batteries
01/24/06	219	Pat. 1,065,597	Cement Burning Kilns
[01/27/06]	220	Ser. 298,282	Electric Automobile
02/01/06	223	Ser. 299,484	Feeding Apparatus for Cement Kilns
02/24/06	226	Pat. 964,096	Electroplating
03/17/06	227	Ser. 306,782	Electroplating
05/07/06	234	Pat. 1,059,661	Portland Cement
09/11/06	263	Pat. 962,823	Crushing Rolls, Cement
[09/13/06]	261	Ser. 334,411	Shaft Bearings
11/16/06	275	Ser. 345,043	Cement Burning Apparatus
11/16/06	276	Ser. 345,044	Blast Furnaces
12/28/06	280	Ser. 352,417	Concentrating Silver Ores
12/28/06	282	Pat. 1,024,839	Phonographic Recording Stylus
02/23/07	296	Pat. 975,339	Duplicating Talking Machine Records
05/08/07	314	Pat. 876,445	Electrolytes for Alkaline Storage Batteries
05/28/07	320	Pat. 1,163,329	Filaments for Incandescent Electric Lamp
06/11/07	321	Ser. 378,891	Telephones
06/11/07	322	Pat. 861,819	Discharging Apparatus for Belt Conveyors
06/11/07	324	Pat. 954,789	Sprocket-chain Drive
06/18/07	325	Pat. 909,877	Telegraphy
[11/14/07]	351	Ser. 403,043	Filaments for Incandescent Lamps
11/21/07	356	Pat. R13,434	Discharging Apparatus for Belt Conveyors
02/04/08	379	Pat. 909,167	Water Proofing Paint for Portland Cement Buildings
02/04/08	380	Pat. 896,811	Metallic Films for Use with the Storage Battery Electrodes
02/04/08	381	Pat. 1,182,897	Recording and Reproducing Motion and Sound
03/13/08	384	Pat. 996,625	Phonograph Reproducers
03/13/08	385	Ser. 421,887	Phonograph Records
03/13/08	386	Ser. 421,884	Phonograph Records Case A
03/13/08	387	Ser. 421,885	Phonograph Records Case B
03/13/08	388	Ser. 421,886	Phonograph Records Case C
03/13/08	389	Pat. 999,762	Storage Batteries
03/13/08	390	Pat. 975,340	Phonograph Reproducers
03/13/08	391	Pat. 944,481	Artificially Aging or Seasoning Portland Cement
03/13/08	393	Pat. 1,013,869	Bearings
03/13/08	394	Ser. 422,650	Reproducing Motion and Sound

05/27/08	413	Pat. 909,168	Water Proofing Fibers and Fabrics
06/08/08	417	Pat. 993,294	Device for Feeding Pulverulent Material
[06/09/08]	527	Pat. 1,081,728	Spark Plugs [W. L. Edison]
08/10/08	422	Pat. 1,219,272	Cement Buildings
08/10/08	423	Ser. 448,292	Color Picture Exhibiting Apparatus
08/20/08	436	Pat. 970,616	Flying Machines
10/10/08	428	Ser. 457,592	Phonograph Records Case E
10/10/08	430	Pat. 996,070	Rotary Kilns
11/20/08	439	Ser. 463,943	Water Proofing Material for Concrete
11/21/08	440	Pat. 1,148,832	Utilizing the Waste Heat in Kilns
12/09/08	442	Ser. 467,156	Treating Mold for Concrete
12/22/08	447	Pat. 1,123,261	Mold for Concrete Construction
01/27/09	454	Pat. 1,002,504	Crushing and Separating Fine Materials
02/18/09	456	Ser. 479,587	Phonographs
02/18/09	457	Ser. 479,586	Sound Records
03/02/09	458	Pat. 1,158,659	Phonograph Records Case A
11/04/09	547	Ser. 526,428	Air Pumps [W. L. Edison]
11/09/09	552	Ser. 528,323	Phonograph Reproducurs
12/04/09	560	Pat. 1,056,517	Reproducing Sound
12/04/09	561	Ser. 532,074	Sound Reproducing Apparatus
03/19/10	587	Pat. 1,110,428	Forming Phonograph Styluses
04/14/10	588	Pat. 1,019,441	Sound Recording Apparatus
05/02/10	596	Pat. 1,041,983	Phonograph Stylus
05/19/10	600	Ser. 563,041	Can or Receptacle
05/31/10	602	Pat. 1,178,062	Moving Picture Apparatus
05/31/10	603	Pat. 1,036,471	Storage Batteries
06/13/10	607	Pat. 1,115,463	Electrode Elements
07/02/10	611	Pat. 1,167,637	Utilizing Waste Heat in Kilns
08/29/10	630	Ser. 579,706	Vehicle Wheels
10/04/10	645	Pat. 1,099,241	Rectifiers
10/21/10	655	Ser. 588,982	Sound Records
12/05/10	674	Pat. 1,184,332	Talking Machines
12/07/10	649	Pat. 1,110,382	Sound Modifiers
12/08/10	675	Ser. 596,537	Disc Sound Records

No. 2230Serial No. 709,1461001

Applicant.

Thomas A. Edison

Address.



Title

Improvements in Electric Meters.

Filed

Mar. 17/99Examiner's Room No. 86

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No. 663,015Issued December 4, 1900

ACTIONS.

1	<u>Rejected Apr. 11/99</u>	16
2	<u>Granted Mar. 26, 1900.</u>	17
3	<u>Rejected Apr. 2, 1900.</u>	18
4	<u>Granted May 7, 1900.</u>	19
5	<u>Allowed May 12, 1900.</u>	20
6	<u>Final Feb. 10, 1900</u>	21
7		22
8		23
9		24
10		25
11		26
12		27
13		28
14		29
15		30

RICHARD N. DYER,

31 Nassau Street,
NEW YORK CITY.

The object of the invention is the production of a very accurate, simple, and reliable meter for measuring Electric Currents -

The invention consists in ~~measuring the current by its electrolytic action upon salts of mercury~~ subjecting a soluble salt of mercury to electrolysis by a current fraction of the current to be measured, and causing conditions to be made whereby the metallic mercury set free by electrolysis, either drops into a capillary bore of a glass tube and the amount read off by means of an index as with a thermometer or the mercury is dropped into a receptacle suspended in the liquid by a wire connected to a shaft with a retractile valve isolating spring and the weight of the mercury so added causing rotation of the shaft which the pointer upon the shaft passing over an index

whereby the weight of the mercury is
read off directly. Both the tube &
the index having been previously
calibrated. -

A is the ~~cell~~ electrolytic cell
Containing Mercurous Nitrate saturated
to a point where it will not
crystallize out when subjected
to a temperature of 35 Fahr -

F is the mercury electrode
connected to the system by
~~the~~ a platinum wire sealed into
the glass tube D - & wholly
immersed in the Mercury

C is a very small platinum
wire also sealed into the
glass tube B. for ~~20~~ or 20
light meters or less the

4
Diameter of the platinum wire
should be about $\frac{1}{1000}$ of an
inch and about one inch
long for larger meters the
total surface of platinum
should increase ^{nearly} in proportion
to the lamps to be measured

The two platinum electrodes
are connected across a
shunt through a resistance
of about 1000 ohms a
portion of this resistance being
made of iron wire. The other
resistance wire should be of

of the same metal as the
shunt so that they will
mutually compensate for ~~the~~
changes of temperature
The Iron Resistance however
changes its resistance very
greatly with changes of
temperature and a sufficient
quantity of Iron wire is used
that the diminution of resistance
of the solution by increase of
temperature shall be ~~roughly~~
balanced ~~by~~ by a rise of
Resistance in the Iron wire

c 6- 3

The Resistance of the Electrolytic Cell which I employ for 20 lights is about 8 ohms.

The resistance of the iron wire will depend upon its purity & will be generally several times that of the cell.

The larger resistance coil is ~~for~~ inserted for the purpose of rendering any changes in the resistance of the cell other than that due to temperature a small percentage of the total resistance.

7
for instance with full load
the resistance of the cell
may go as low as 6 ohms
and with the smallest load
it may go to 15 ohms -
were there no resistance in
circuit this variation of
resistance ~~also~~ would make
the readings useless but by
the insertion of 1000 ohms -
the change from 6 to 15 ohms
or a difference of 9 ohms -
^{causes a variation in the current of}
less than one percent -

The purer the Mercurous Nitrate & Mercury
is the less will be the changes
of resistance due to variations
of load - The mercury itself
should be triple distilled in
vacuo -

~~The action~~ The action of the
meter is as follows. The shunt
placed in the main line has
we will say $\frac{1}{4}$ of 1 per cent
of the total resistance when
the maximum lamps are in
circuit for which the meter
is to measure - The meter
will receive a current of 1000 of

that due to ⁹ the Electrostatic
force between the ² ends of
the shunt,

Mercury is deposited upon the
platinum wire in very small
globules, these collect in great
numbers and when they reach
about $\frac{1}{1000}$ of an inch in diameter
they drop off into the receptacle
E and down the bend of the Capillary
tube G. They do not pass away
the higher part of the bend
but collect & coalesce together
but not perfectly. The Calcium

10
formed is very much broken up
by the liquid between sections
which have coalesced - at the
end of a month the column
extends up into E & a large
globule is formed -

When it is desired to read the
meter - the screw S is turned
& the Mercury N in the U shaped
tube is forced down. This causes
the liquid at M to enter
the capillary tube K & force
the whole of the Mercury
at G up into E & to a

11

globule, any liquid that had
become entangled passes
up the sides of the large globule.
The junction between the Capillary
bore & E being ground at a
angle to insure the coalescing of
the mercury & elimination of the
liquid. ^{see X} If now the screw S
is turned the other way. The
liquid M is drawn out of the
Capillary tube & the ~~the~~
globule at E comes down into
the Capillary tube as an
unbroken column. The screw

is turned until the bottom of
the Column is at Zero & the
length is read off by the scale.
The Column may remain until
the next reading or it can be
removed at once to the check
bottle, by opening the pinch cock
at B.B. = The latter is then closed &
the meter is ready for another
reading. The amount of
liquid removed by running
the mercury into the check
bottle is very small. Monthly
readings for ten years not
lowering the liquid in the cell

more than $\frac{1}{4}$ of an inch -

The Check bottle which may be placed in a locked receptacle can be used any time to check the single reading or the aggregate readings of the meter. Either by removing the mercury & weighing it, or by pouring it into a calibrated capillary tube - The Capillary tube is calibrated by weighing a globe of mercury of 500 ~~mg~~ milligram putting it in the tube ~~and~~ marking the Endo Zero & 500 & dividing the scale into 500 divisions. Can be taken to use a smaller quantity of mercury previously

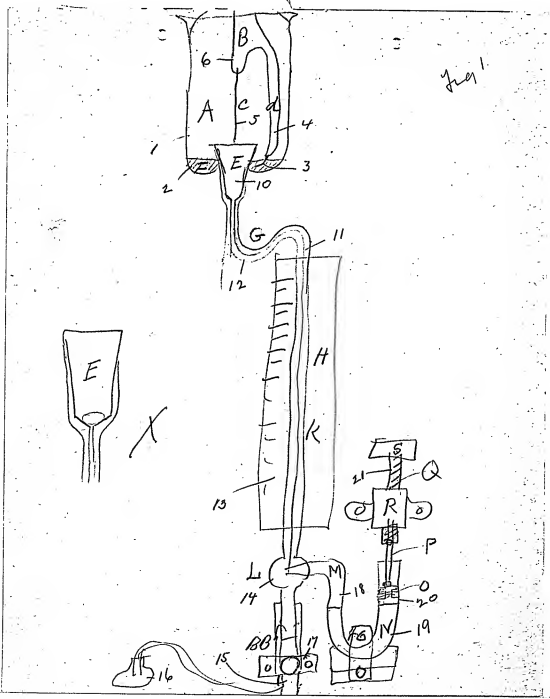
14

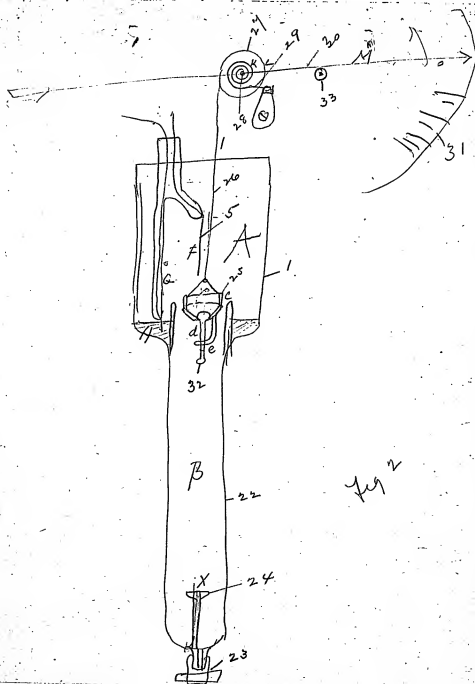
to ascular, ^{all} ~~the~~ parts of the
base is of the same diameter -

The Index design is operated ~~the~~ electrically
in the same manner as the
Capillary tube design with
the exception that the mercury
globules produced by electrolysis
drop into a glass dish suspended
from a platinum wire ^{two} diameter.
This wire is connected to a disk
on a shaft ~~which~~ which is provided
with a retractile coiled hair
spring - so adjusted as to balance
the weight of the dish & bring
pointer M (also connected to the
shaft) to zero - as mercury
accumulates in the dish ~~the~~ it
descends & the Index moves.

around the scale - ~~The Spring~~
the scale is calibrated from
the spring so that each division
indicates the deposit of one
milligram of Mercury in the
dish - at the end of the month
the maximum movement of the
index is noted & it ~~to~~ it is
then carried around to the extreme
limit from Zero which causes
the dish to descend to the bottom
of the tube B. the Valve d strikes
the projection X raising it up &
dumping the Mercury which
can be drawn off at any time &
weighed by opening the Valve at the

bottom -





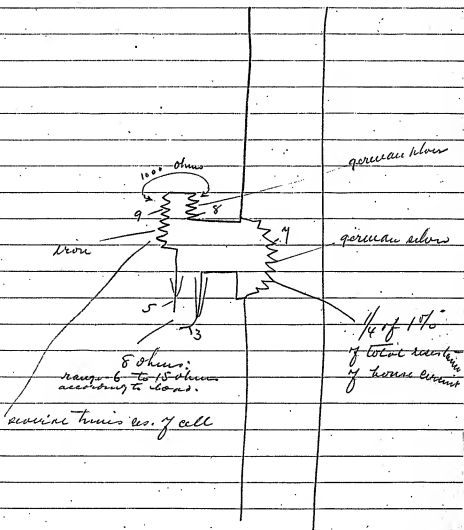


Fig 3

No. 22311002Serial No. 709,447

Applicant.

Thomas A. Edison

Address.

Title Process of (Apparatus) Securing of Very Fine MaterialsFiled Feb. 17, 1899.Examiner's Room No. 243

Assignee

Ass'g't Exec.

Recorded

Index

Page

Patent No. 648934 Issued May 8, 1900.

ACTIONS.

- | | | | |
|----|--------------------------------------|----|--|
| 1 | <u>Rejected Apr. 21/99</u> | 16 | |
| 2 | <u>Amended Jan. 20, 1900.</u> | 17 | |
| 3 | <u>L. from O. Feb. 3, 1900.</u> | 18 | |
| 4 | <u>Amended Feb. 21, 1900.</u> | 19 | |
| 5 | <u>L. from O. Feb. 7, 1900.</u> | 20 | |
| 6 | <u>L. to O. Feb. 26, 1900.</u> | 21 | |
| 7 | <u>Allowed April 3, 1900.</u> | 22 | |
| 8 | <u>Final fee paid Apr. 12, 1900.</u> | 23 | |
| 9 | | 24 | |
| 10 | | 25 | |
| 11 | | 26 | |
| 12 | | 27 | |
| 13 | | 28 | |
| 14 | | 29 | |
| 15 | | 30 | |
- Handwritten notes:*
 "See" (near line 1)
 "Amended" (near line 2)
 "L. from O." (near line 3)
 "L. to O." (near line 6)
 "Allowed" (near line 7)
 "Final fee paid" (near line 8)
 "Amended" (near line 12)
 "L. from O." (near line 13)
 "L. to O." (near line 14)
 "Allowed" (near line 15)
 "Final fee paid" (near line 16)
 "Amended" (near line 17)
 "L. from O." (near line 18)
 "L. to O." (near line 19)
 "Allowed" (near line 20)
 "Final fee paid" (near line 21)
 "Amended" (near line 22)
 "L. from O." (near line 23)
 "L. to O." (near line 24)
 "Allowed" (near line 25)
 "Final fee paid" (near line 26)
 "Amended" (near line 27)
 "L. from O." (near line 28)
 "L. to O." (near line 29)
 "Allowed" (near line 30)
 "Final fee paid" (near line 31)

RICHARD N. DYER,

31 Nassau Street,
NEW YORK CITY.

The object of this invention is to screen or size very fine material such as portland Cement, effectively & economically -

The invention consists in carrying continuously a practically constant load of ~~large~~ very much larger material than the material to be screened out and adding to this constant load ~~from~~ the products of crushing & subtracting the crushed material by means of screens preferably those described in my application filed ~~_____~~

The practice ~~the constant load~~ ^{the quantity} of ~~coarse material~~ ^{the quantity} of coarse material necessary to permit successful screening of the fine material added to it depends upon the fineness of the latter - with a slot 004 wire - 90 percent of the whole

load in continuous transit should be of coarse material preferably $\frac{1}{8}$ of an inch cube -

If the screen slot be 009 across then 70 per cent of the total should be large -

If 012, 68 percent is all that is necessary - If it is attempted to diminish the amount of coarse material the screens clog as well as the material.

This method applied to the crushing & screening of portland Cement is shown in fig 1

a b c are the ³ rolls constructed
substantially as shown in my
application _____

~~and~~ for fine grinding these are preferably placed horizontal instead of perpendicular and only one set of rolls used, the permits of the whole of the work being done between one pair of rolls under great pressure and 90 percent of material $1/8$ inch cuts passing between the rolls is crushed at one pass to 150 mesh or finer. ~~It~~ ^{Coarser} It is a conveyor which brings the material from another part of the mill for final grinding. This material falls on the conveyor L which delivers

It to an Elevator M.
The fine material is delivered
to the Conveyor N which delivers it to
the bank of screens, The
screens abstract the fine
material & deliver to the
Conveyor K going to the storage
bins while the Coarse
material passes down
~~into the hopper~~
~~into the bin~~ + ~~is~~
is again delivered upon the
Conveyor L by the chute
E. Connected to E is a
hopper & roller feed for
supplying the disc separator
of the Coarse material.

5
to the rolls - and this feed is
so adjusted that the
roll crushes an amount equal
to the amount received
from Conveyor H. =

The Crushing feed roll is
not started until ~~both~~
~~the~~ the Conveyor + screen
system has been loaded
up with the proper amount
of coarse material + which
is making a continuous
circuit. When the proper
amount is in transit to
permit the screens to do
their work properly, the
feed roll for the crusher

6
is started.

By this system the screens
are kept free, have great
capacity and material impossible
to screen in any other manner
is easily effected by this system.

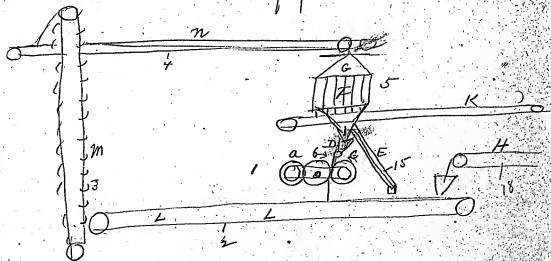
~~the~~

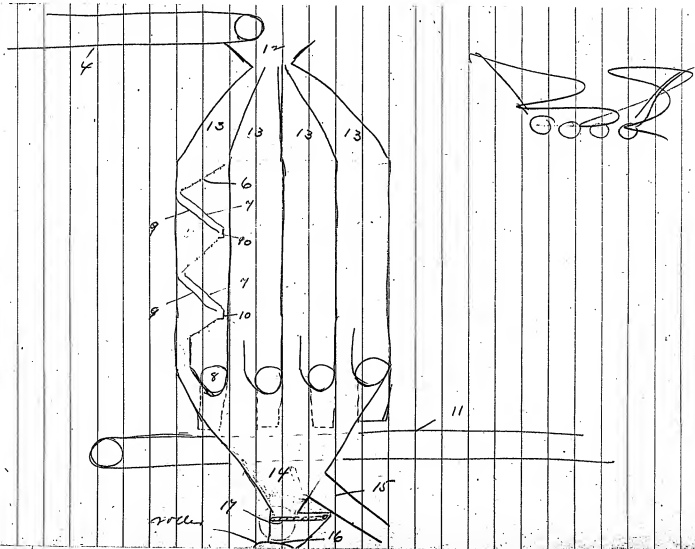
I guess some good claims
can be obtained on this

E

23rd Jan / 99

Fig. 1





No. 2242Case 1008Serial No. 7069762242

Applicant.

Address.

Thomas A. EdisonTitle Method of and Apparatus for Recording Compressed Air in Pneumatic TubesFiled Feb. 27, 1899.Examiner's Room No. 35Assignee Edison-Inventor Compressed Air Company, Inc.Ass'g't Exec'd Apr. 24/99 Recorded May 4/99 Liber'd 59 Page 112Patent No. 643764 Issued Feb. 20, 1900.

ACTIONS.

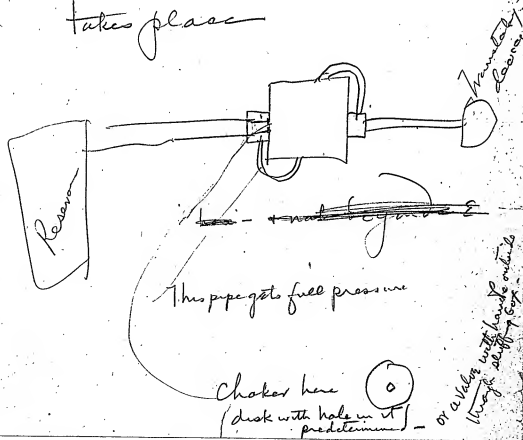
- | | | | |
|----|------------------------------------|----|-------------------------------|
| 1 | <u>Rejected Apr. 14/99.</u> | 16 | <u>Allowed Jan. 22, 1900.</u> |
| 2 | <u>Amended Dec. 19/99.</u> | 17 | <u>Final Dec. 29/99.</u> |
| 3 | <u>Rejected July 1/99.</u> | 18 | |
| 4 | <u>Ex. to O. Aug. 15/99.</u> | 19 | |
| 5 | <u>Rejected Sept. 6/99.</u> | 20 | |
| 6 | <u>Apparatus Sept. 7/99.</u> | 21 | |
| 7 | <u>Ex. from O. Sept. 13/99.</u> | 22 | |
| 8 | <u>Amended</u> | 23 | |
| 9 | <u>Revised Oct. 11/99 at 1 PM.</u> | 24 | |
| 10 | <u>Ex. to O. Sept. 20/99.</u> | 25 | |
| 11 | <u>Ex. from O. Sept. 13/99.</u> | 26 | |
| 12 | <u>Decision Oct. 27/99.</u> | 27 | |
| 13 | <u>Amended Nov. 9/99.</u> | 28 | |
| 14 | <u>Rejected Dec. 4/99.</u> | 29 | |
| 15 | <u>Amended Dec. 6/99.</u> | 30 | |

RICHARD N. DYER,

31 Nassau Street,
NEW YORK CITY.

Dyer-

You say "cause a drop of
pressure beyond the source
of heat - It seems to
me the expression is not
exact. The fall of pressure
takes place



No. 2236100 LSerial No. 714,340

Applicant.

Address. ☒Thomas A. Edison
Charles M. JohnsonTitle Infrt. in Expanding CollapsFiled April 21, 1899Examiner's Room No. 255

Assignee _____

Ass'g't Exec. _____

Recorded _____

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Page _____

Patent No. 641,281 Issued January 16, 1900.

ACTIONS.

- | | | |
|----|-------------------------------|----|
| 1 | <u>Reported May 10, 1899.</u> | 16 |
| 2 | <u>Specified June 29/99.</u> | 17 |
| 3 | <u>Allowed July 8/99.</u> | 18 |
| 4 | <u>Final Dec. 21/99.</u> | 19 |
| 5 | | 20 |
| 6 | | 21 |
| 7 | | 22 |
| 8 | | 23 |
| 9 | | 24 |
| 10 | | 25 |
| 11 | | 26 |
| 12 | | 27 |
| 13 | | 28 |
| 14 | | 29 |
| 15 | | 30 |

RICHARD N. DYER,

31 Nassau Street,

NEW YORK CITY.

Dyers



9th

This man has improved the
old expanding pulley & wants
to take out patent in this C
he send papers & money order
but it look to me as if the
papers were not according to
Rule - He also says they
must be filed before Feb'y
9th & I need them this
morning - Please put them
through & state what you
had to do to them &
Send extra bill to his address
with explanatory letter. He
seems to think these of something in it
Edison

Very many thanks to you for the
con of the paper

Folio No. 1Serial No. 722

Applicant.

Address.

Thomas A. EdisonEdison Research, N. J.

Title

Wire Screening Plates

Filed

June 29, 1899

Examiner's Room No.

243

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1. Rehearsal March 10, 1899 16
2. Amended Jan. 19, 1900 17
3. Rehearsal Feb. 3, 1900 18
4. Amended Jan. 24, 1901 19
5. Rehearsal Feb. 13, 1901 20
6. Amended March 27, 1902 21
7. Amended March 27, 1902 22
8. Amended March 27, 1902 23
9. Amended March 27, 1902 24
10. Examiner's Chief Examiner March 27, 1902 25
11. Amended March 27, 1902 26
12. 27
13. 28
14. 29
15. 30

FRANK L. DYER,

Counsel,

ORANGE, NEW JERSEY.

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 42.
SAMUEL O. EDMONDS,
REGISTRATION NO. 44.
FRANK L. DYER,
REGISTRATION NO. 46.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT IN
FINE SCREENING PLATES AND PROCESS OF MAKING THE SAME

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

1

722 229

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN FINE SCREENING PLATES ~~AND PROCESS OF MAKING THE SAME~~ (Case No. 1009), of which the following is a description:

My invention relates primarily to improvements in screens for effecting a screening operation of particles of extreme fineness.

I have determined from experiment that the screening capacity of a screen plate depends almost entirely upon the thickness of the plate. I have employed sheet steel with punched slots, the latter being several times greater in length than in width, and with such screens I have determined that a plate, for instance, .010 of an inch in thickness having slots punched therein .006 of an inch in width will possess only a small fraction of the capacity of a plate having slots of the same width but being itself of a thickness of only .003 of an inch. I find that the thicker plate becomes rapidly clogged with particles of the material in process of screening, such as iron ore, thus reducing the screening capacity in a very short time to almost nothing, whereas if the plate is of less thickness than the width of its slots, it does not become clogged and can be operated for weeks without cleaning.

The objection which I have experienced in the use of very thin plates has been their liability to wear, and it is to the accomplishment of a process by which this objection may be overcome that my present invention also relates. To

2
4
5
this end, the invention consists in the use of very thin plates having orifices, preferably slots, therein of greater width than the thickness of the plates, the width of the orifices being adapted for very fine screening.

It is the object of my invention to obtain the high screening capacity resulting from the use of thin plates, and at the same time to secure durability thereof.

In order that my invention may be better understood, attention is directed to the accompanying drawing forming a part of this specification, and in which figure 1 is a cross-sectional view of a screen plate embodying my present invention, and figure 2 a similar view illustrating the preferred process which I carry out for the partial hardening of such plates.

In both of the above views, corresponding parts are represented by the same letters of reference.

8
A represents a thin sheet-iron plate, suitably hardened, as I will explain, provided with orifices, preferably slots, a therein. The relation between the thickness of the plate A and the width of the orifices a is such that the former dimension is less than the latter. In the specific instance illustrated I show a plate which is indicated as being .006 of an inch in thickness, and having slots a therein which are indicated as being of a width each of .009 of an inch. *Jan 24, 1901*

Jan 13
In making my improved screens I prefer to proceed substantially as follows: A sheet-iron plate A is first secured, and the orifices a are formed therein preferably in a punch-press with gang-dies or punches. The plate, after having been punched with the orifices, is then dipped in a bath of molten cyanide of potassium for a few seconds. It is then withdrawn and immediately laid upon a flat iron plate such as B (figure 2), over which is located a corresponding

1

plate C, which is allowed to drop upon the punched plate A. The sudden chilling to which the plate A will be subjected by coming in contact with the larger masses of the plates B and C, serves to harden the plate A and to keep it perfectly flat until cooled. Any tendency of the plate A to warp or buckle during the cooling operation is thus overcome. After the punched plate A has sufficiently cooled, it is then immersed in a water bath to dissolve off the cyanide of potassium, and after this bath it is dried and oiled in any suitable and usual manner. As a specific instance of a convenient process for the proper hardening of plates .006 of an inch in thickness having punched slots therein each of a width of .009 of an inch, I will state that the plate may be allowed to remain in the molten bath of cyanide of potassium for thirty-five seconds, and during this period the iron will become carbonated to a depth of about .001 of an inch on each side. The surface hardening to which the screen plate will be thus subjected between the plates B and C, will be of a very high order, while at the same time the inner portions of the plate will be left sufficiently soft and pliable as to allow the plate to be bent or otherwise manipulated. If the plate were allowed to remain too long in the bath of cyanide of potassium, it would be rendered objectionably brittle, since the absorption of carbon would progress entirely through the same.

4

Instead of the special surface hardening process above described for the proper hardening of screen plates of this specific character, it will be understood that surface hardening of said screens may be carried out by the usual method of cementation by packing the plates in charcoal, leather etc. I consider the special process above described to be preferable however, since it is more expeditious and the depth of carbonation is under entire control.

a

2
8
Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. As a new article of manufacture, a very thin metal plate having screening orifices therein of greater width than the thickness of said plate, substantially as set forth.

2. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with orifices formed therein of a greater width than the thickness of said plate, substantially as set forth.

3. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having orifices formed therein of greater width than the thickness of said plate, substantially as set forth.

4. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central portion, said plate having elongated screening orifices formed therein, substantially as set forth.

5. As a new article of manufacture, a very thin metal plate having screening slots therein of greater width than the thickness of said plate, substantially as set forth.

6. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with slots formed therein of greater width than the thickness of said plate, substantially as set forth.

7. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having slots formed therein of greater width than the thickness of said plate, substantially as set forth.

8. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central por-

tion, said plate having elongated screening slots formed therein, substantially as set forth.

9. The method of making screening plates which consists in first forming a series of orifices in a sheet of malleable metal, and in subjecting the screening surface of said metal to a hardening process, substantially as set forth.

10. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, and in subjecting both surfaces of said plate to a hardening process, substantially as set forth.

11. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in a carbonating liquid, in then subjecting the screening surface to a chilling action, and in finally washing the plate to remove such liquid, substantially as set forth.

12. The method of forming screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in molten cyanide of potassium, in then subjecting the screening surface to a chilling action, and in finally washing the plate to remove the cyanide of potassium, substantially as set forth.

13. The method of making screening plates which consists in forming a series of orifices in a plate of malleable metal, in dipping said plate in a bath of molten cyanide of potassium, in chilling the screening surface of said plate, in maintaining the plate under a flattened pressure until cool, and in finally washing the plate for the removal of the cyanide of potassium, substantially as set forth.

14. The method of making screening plates which consists in forming a series of orifices in a plate of mal-

leable metal, in dipping the plate in a bath of molten cyanide of potassium, in subjecting the plate to pressure between two plates of larger mass, whereby the surfaces of the screen plate will be chilled and the plate will be maintained under pressure during the cooling operation, and finally, after the said plate has been cooled, in dipping it in a bath of water for the removal of the cyanide of potassium, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 21st DAY OF June 1899

Thomas A. Edison

Witnesses:

1. J. A. Boehme
2. J. F. Randolph

Oath.

State of New Jersey } ss.:
County of Essex

THOMAS A. EDISON, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States, and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;
THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN FINE SCREENING PLATES AND PROCESS OF MAKING
THE SAME

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

Thomas A. Edison

SWORN TO AND SUBSCRIBED BEFORE ME THIS 21st DAY OF June 1899

(SEAL)

J. F. Randolph
NOTARY PUBLIC
New Jersey

Fig. 1

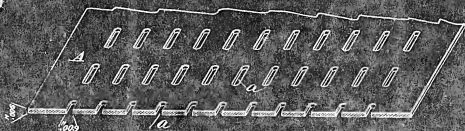
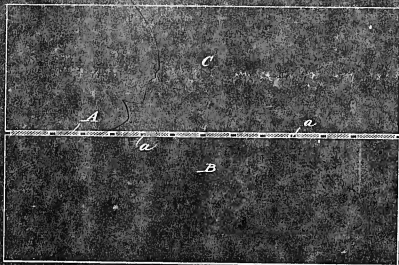


Fig. 2



Witnesses:

Joos. F. Cleman

Geo. A. Taylor

Inventor

Thomas A. Edison

by L. J. Edwards

Att'y

2-020.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

{ Series of 1880.

No. 722229

DEPARTMENT OF THE INTERIOR,

United States Patent Office

Washington, D. C.,

June 29 1899

RECEIVED
JUL 1 1899
RICHARDSON

SIR:

I have to acknowledge the receipt of the petition, specification, oath, and
drawing of your alleged improvement in
*Thin screening plates & process of
making same*
with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up
for examination in its order

You will be duly advised of the examination.

Very respectfully,

Case will be taken up for
examination in about one month.

C. H. Druell
Commissioner of Patents.

J. A. Edison
J. A. Dyer, Edmunds & Dyer
31 Nassau St New York

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification,
oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are
furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

See if payment is made by check or draft, the credits granted in subject to the collection of the same.

Form No. 243-
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

Any communication respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.,

Aug. 10, 1899.

U.S. PATENT OFFICE

AUG 10 1899

MAILED

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

31 Nassau St.,

New York City.

Please find below a communication from the EXAMINER in charge of your application.

#722,229, for Fine Screening Plates, and Process of Making the Same,
filed June 29, 1899.

C. H. Dwell
Commissioner of Patents.

Rule 41 of the Rules of Practice in this Office, provides
that "A machine, a process, and a product, are separate and independent
inventions; and claims for each must be presented in a separate
application". Claims 1 to 8, inclusive, are for an article which
ordinarily forms part of a machine, and claims 9 to 13, for a method
or process. Under the rule division is required, and in view of the
decision in case of Rappleye, 85 O.G., 2696, it is required that di-
vision be made before action on the merits. *

With the view of aiding applicant in making division reference
is made to the following: - Herald, 207,178, Aug. 20, 1878; Quattler,
255,345, Mar. 21, 1882; Berthelet, 479,617, July 28, 1892; and Cross,
583,032, May 29, 1897 - all in Mills; Ore & Coal, Birters & Sorensen.
See, also, 340,542, J. Bates, April 27, 1886--Thrashing, Shaking
Screens.

THOMAS A. EDISON
FINE SCREENING PLATES
AND PROCESS OF MAKING
THE SAME

ROOM NO. 243.

FILED JUNE 29, 1899

SERIAL NO. 722,229

HONORABLE COMMISSIONER OF PATENTS,

S I R :-

In the above entitled application, the following amendment is submitted:

Change the title of the invention to ----- IMPROVE-
MENT IN FINE SCREENING PLATES -----

In the petition, erase the words "AND PROCESS OF
MAKING THE SAME".

Page 1, lines 5 and 6, erase the words "AND PROCESS
OF MAKING THE SAME".

Page 3, after the last line insert ----- I do not
claim herein the process involved in the manufacture of fine
screening plates by the surface hardening thereof, either
broadly considered or specifically, by dipping said plates
in a bath of molten cyanide of potassium as explained, since
that process, both specifically and generically considered,
is embodied in a separate application.-----

Cancel claims 9 to 14 inclusive.

Action on the merits is respectfully requested.

The several references to which the Examiner has
called applicant's attention have been carefully considered.
So far as can be determined, they all show ordinary screen-
ing plates of the usual thickness. Applicant's invention
relates specifically to screening plates which are micro-
scopically thin, whereby the effective screening of extreme-
ly fine material can be carried out. Applicant is entirely
willing to acknowledge the references and any other ordinary

screening plates. In the sense of the specification, the expressions "very thin" and "of extreme thinness" mark a very wide distinction from anything that is disclosed in the references. The second claim is limited to a screening plate "made of hardened metal", the third claim to a plate having "a hardened screening surface but with a malleable central portion", and the fourth claim is limited to a plate having "hardened surfaces and a malleable central portion". The sixth, seventh and eighth claims are correspondingly limited to plates such as above recited having screening slots therein. There does not seem to be any question that these claims are fully distinguished from the references.

Very respectfully,

Wm. Edwards & Boyd
Attorneys for Edison.

New York, January 19, 1900.

Room No. 243.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

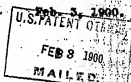
WASHINGTON, D. C.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

31 Nassau St.,

New York City.



Please read below a communication from the EXAMINER in charge of your application.

722,849, for Fine Screening Plates and Process of Making Same, filed
June 29, 1899.

C. H. Duell
Commissioner of Patents.

This case has been further considered in view of amendment
filed on the 30th ult.

The terms "very thin" (claims 1 and 5) and "extreme thinness",
(claims 2, 3, 6 and 7) are relative terms without special or definite
significance. A plate or screen may be thin, or very thin, or extreme-
ly thin, when measured by one standard, and thick, or very thick,
when measured by another. Metal screens having been made from plates
of different thickness, as shown by the references before cited, the
thickness of plate which applicant has selected for his purpose is
merely a matter of degree and devoid of patentable novelty.

The references show screens made of sheet metal with elongated
slots therein whose width is greater than the thickness of the plate,
and these therefore meet the construction defined in the claims.

In a work entitled "Workshop Receipts for Manufacturers, Me-
chanics, and Scientific Amateurs", 3d Series, by G. E. W. Lock, a
copy of which may be found in the library of this office, is described
(page 374) a process of case-hardening thin articles by heating the
same and then placing them "between 2 cold iron plates". On page
384 of the same work the use of Potash in case-hardening
is set forth, this substance being employed on account of its sus-
taining properties. However, the method employed by applicant for

NOTE: In every amendment the exact word or words to be stricken out or inserted in the application must be specified
and the precise point indicated where the emendation or insertion is to be made. All such amendments must be on sheets of paper
separate from the papers previously filed, and written on both sides of the paper.

T. A. Edison,

No. 722,229.

2-

case-hardening his screen plate is foreign to the case under consideration, and the citations above made are made merely with the view of showing the state of the art and not because they are considered to have any special bearing upon this case. Thin plates having before been hardened, and it being a matter of common knowledge that a hardened plate or screen will better resist wear than a soft one, there is no invention in case-hardening a punched plate, whether of extra or ordinary thickness, in the manner in which the unpunched or imperforate plates have been hardened.

The claims are rejected for lack of patentable novelty in view of the state of the art as disclosed by the references cited.

THOMAS A. EDISON

FINE SCREENING PLATES AND PROCESS OF
MAKING SAME ROOM NO. 243.

FILED JUNE 29, 1899

SERIAL NO. 722,229

HON. COMMISSIONER OF PATENTS,

S I R :

Please amend as follows:-

Page 2, after line 25, insert -----In practice
I find that my improved screening plates can be made to vary
in thickness between approximately .035 of an inch having
slots .2 of an inch in width for the thickest plates, down
to .006 of an inch in thickness with slots .009 of an inch
in width for the thinnest plates, and in the following
claims where reference is made to very thin plates or to
plates of extreme thinness, I have reference to plates not
greater in thickness than .035 of an inch.-----

It is hoped that in view of the above amendment, by
which a definite limitation is imposed on the claims, the
case may be allowed. All the references show relatively
thick plates, that is to say, plates having a thickness of
at least four times the thickness of the maximum figure
adopted by applicant. With very thin plates, such as ap-
plicant uses, case hardening is necessary. With relatively
thick plates, such as the references employ, such an expedi-
ent is entirely unnecessary.

Very respectfully,

THOMAS A. EDISON,

By 

His Attorneys.

New York, January 24, 1901.

Room No. 243

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-246

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,

UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.

Feb. 13, 1901



A.B.S.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

No. 31 Nassau Street,

New York City, N. Y.

Please find below a communication from the EXAMINER in charge of your application.

#722,229, filed June 29, 1899, for Fine Screening Plates and Process
of Making Same.

C. H. Duell
Commissioner of Patents.

This case has been considered in connection with amendment
filed Jan. 25th, 1901.

The references of record and the reasons before given are ad-
hered to and the case is finally rejected.

The case is now in condition for appeal to the Board of
Examiners-in-Chief.

Examiner,

Division XXV.

NOTE.—In every amendment the exact word or words to be stricken out or inserted in the application must be specified
and the precise point indicated where the change or insertion is to be made. All such amendments must be on sheets of paper
separate from the papers previously filed, and written on but one side of the paper.

THOMAS A. EDISON :
FINE SCREENING PLATES :
FILED JUNE 29, 1899 : ROOM NO. 243.
SERIAL NO. 722,229 :

HONORABLE COMMISSIONER OF PATENTS,

S I R :---

In the above entitled application, we hereby appeal to the Examiners in Chief from the decision of the Primary Examiner, who, on February 18th 1901, rejected for a second time and finally all the claims of the application, and in support hereof we beg to assign the following reasons of appeal:

1. The Examiner erred in deciding that the references of record anticipate the terms of the claims.
 2. The Examiner erred in holding that the references of record anticipate the substance of said claims.
 3. The Examiner erred in not allowing said claims.
- An oral hearing is requested.

Respectfully,

THOMAS A. EDISON,

By B. J. E. E. E.

His Attorneys.

New York, January 27, 1902.

2-176.

Room No.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR.

United States Patent Office

Washington, D. C., July 15, 1902



SIR:

I have to acknowledge the receipt of the APPEAL by the

Exr - in - Chief

in your application for Improvement in

Fine Screening Plates

with \$10.00

as

the fee payable thereon.

Of the result due advice will be given.

Very respectfully,

R. A. Allam
Commissioner of Patents.

Thomas G. Edison

to Messrs. Edmunds & Dyer
31 Nassau St.

N. Y. City.

Form 73. In every instrument the exact word or words to be stricken out or inserted in the application must be specified and the number of the page on which the change or insertion is to be made. All such amendments must be on sheets of paper separate from the pages previously filed, and written on but one side of the paper.

Room No - 245-
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-246.

communications respecting this
application should give the serial number,
date of filing, and title of invention.

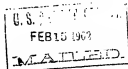
DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.,

Feb. 15, 1902



Thomas A. Edison,
Care Dyer, Edmonds & Dyer,
Edison Laboratory, Orange, N.J.



Please find below a communication from the EXAMINER in charge of your application.

#722,229, filed June 29, 1899, for Screening Plates and Process for
Making Same.

F. J. Allen,

Commissioner of Patents.

Answer to appeal.

In the United States Patent Office.

Application No. 722,229,
Thomas A. Edison,
Fine Screening Plates and
Process of Making Same,
Filed June 29, 1899.

Before the
Hon. Board of Examiners-in-Chief,
On Appeal.

Dyer, Edmonds & Dyer for applicant.

Examiner's Statement.

The claims on which this appeal is based are the following:

- "1. As a new article of manufacture, a very thin metal plate having screening orifices therein of greater width than the thickness of said plate, substantially as set forth.
- "2. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with orifices formed therein of a greater width than the thickness of said plate, substantially as set forth.
- "3. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having orifices formed therein of greater width than the thickness of said plate, substantially as set forth.
- "4. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central portion, said plate having elongated screening orifices formed therein, substantially as set forth.
- "5. As a new article of manufacture, a very thin metal plate having screening slots therein of greater width than the thickness of said plate, substantially as set forth.
- "6. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with slots formed therein of greater width than the thickness of said plate, substantially as set forth.
- "7. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having

slots formed therein of greater width than the thickness of said plate, substantially as set forth.

- "8. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central portion, said plate having elongated screening slots formed therein, substantially as set forth."

The references on which the above-named claims were finally rejected are as follows:

✓ 207,178,	Heald,	Aug. 20, 1878;
✓ 255,325,	Oastler,	March 21, 1882;
✓ 479,617,	Berthelet,	July 26, 1892;
✓ 583,032,	Cross,	May 25, 1897,---
	Mills, Ore and Coal, Sifters and Screens;	
✓ 340,542,	Bates,	April 27, 1886,---
	Thrashing, Shaking Screens; and	

Workshop Receipts for Manufacturers, Mechanics, and Scientific Amateurs," (3d Series, pp. 274, 281,) by C.G.W. Lock----Patent Office Library.

" For answer to the appeal the Examiner respectfully submits the following extract from office letter of February 3, 1900:

"The terms 'very thin' (claims 1 and 5) and 'extreme thinness', (claims 2, 3, 6 and 7) are relative terms without special or definite significance. A plate or screen may be thin, or very thin, or extremely thin, when measured by one standard, and thick, or very thick, when measured by another. Metal screens having been made from plates of different thickness, as shown by the references before cited, the thickness of plate which applicant has selected for his purpose is merely a matter of degree and devoid of patentable novelty.

The references show screens made of sheet metal with elongated slots therein whose width is greater than the thickness of the plate, and these therefore meet the construction defined in the claims.

In a work entitled "Workshop Receipts for Manufacturers, Mechanics, and Scientific Amateurs", 3d Series, by C.G.W. Lock, a copy of which may be found in the library of this office, is described (page 274) a process of case-hardening thin articles by heating the same and then placing them "between 2 cold iron plates". On page 281 of the same work the use of Prussiate of Potash in case-hardening is set forth, this substance being employed on account of its carbonizing properties. However, the method employed by applicant for case-hardening his screen plate is foreign to the case under consideration, and the citations above made are made merely with the view of

showing the state of the art, and not because they are considered to have any special bearing upon this case. Thin plates having before been hardened, and it being a matter of common knowledge that a hardened plate or screen will better resist wear than a soft one, there is no invention in case-hardening a punched plate, whether of extreme or ordinary thinness, in the manner in which unpunched or imperforate plates have been hardened."

Examiner,

Division XXV.

Room 243, U.S. Patent Office,

Feb. 15, 1902.

2-201.

Room No. 242.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,



United States Patent Office,

Washington, D. C., Feb. 17, 1902

Thos. A. Edison

To Supt. Edmund F. Dyer

Dyer

N.Y. City

SIR:

The appeal from the decision of the Examiner in the case of *T. A. Edison* for a patent for an improvement in *Fire Screening Plates* filed *June 29/99*, 1900, Serial No. *722,229*, will be heard by the Examiners-in-Chief, *Wednesday Mar. 12/02 at 1 Pm.*

If appellant, or his attorney, shall not appear at that time the hearing will be regarded as waived, and the case will be decided upon the record.

Very respectfully,

Edison
Mar. 24/02 if you
prefer - E.

F. J. Allen,
Commissioner of Patents.

THOMAS A. EDISON :
 FINE SCREENING PLATES : BEFORE THE EXAMINERS IN CHIEF
 FILED JUNE 29, 1899 : ON APPEAL.
 SERIAL NO. 722,229 :

BRIEF FOR APPELLANT.

The present invention relates to improvements in screening plates of the type covered by Edison patent number 675,057 of May 28, 1901. In that patent the use of short stationary screens with slotted screening openings is disclosed, the idea being to give the material a maximum opportunity to pass through the screening openings. In conducting experiments for the screening of very fine material with screens having slots ranging from .2 of an inch to .009 of an inch, the ordinary stock sheets were slotted and material passed over the same. It was then observed that the screening effect secured became proportionately reduced as the width of the slots was decreased. It was finally discovered that with the very narrow slots, the thickness of the plates was relatively so great that many of the particles became wedged into the slots so as to clog the same and reduce the screening effect. It was found that by making plates always thinner than the width of the slots, as good results could be secured with very narrow slots as with wider slots. The invention of this application, therefore, consists, in the first place, of a screening plate, the openings in which are of greater width than the thickness of the plates.

The making of these plates of extreme thinness encountered another and equally serious difficulty, namely the rapid wearing of the plates in use. What is done, there-

fore, is to case-harden the plates so as to give them preferably a hard screening surface and a malleable central portion, so as "to allow the plate to be bent or otherwise manipulated" (page 3 lines 21-22). The preferable process described in the specification for case-hardening the plates consists in first punching the plate, then dipping it in a bath of molten cyanide of potassium for a few seconds, and finally chilling it between two cold plates of sufficient mass to quickly radiate the heat and also to prevent any warping or buckling of the screening plate during the cooling operation (page 3 lines 6-7). The screening plate is then washed, dried and oiled in the usual way.

We know, of course, that plates for the screening of coarse material, such as coal for example, have been made of less thickness than the width of the screening openings, but with such apparatus the desirability of observing a definite relation between the width of the openings and the thickness of the plates had not apparently been observed. In order that the claims might be limited, therefore, to the making of extremely thin screening plates, we added to the specification by the amendment of January 24th 1901 the following statement:

"In practice, I find that my improved screening plates can be made to vary in thickness between approximately .035 of an inch having slots .2 of an inch in width for the thickest plates, down to .006 of an inch in thickness with slots .009 of an inch in width for the thinnest plates, and in the following claims where reference is made to very thin plates or to plates of extreme thinness, I have reference to plates not greater in thickness than .035 of an inch."

The claims are as follows:

1. As a new article of manufacture, a very thin metal plate having screening orifices therein of greater width than the thickness of said plate, substantially as set forth.
2. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and

with orifices formed therein of a greater width than the thickness of said plate, substantially as set forth.

3. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having orifices formed therein of greater width than the thickness of said plate, substantially as set forth.

4. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central portion, said plate having elongated screening orifices formed therein, substantially as set forth.

5. As a new article of manufacture, a very thin metal plate having screening slots therein of greater width than the thickness of said plate, substantially as set forth.

6. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with slots formed therein of greater width than the thickness of said plate, substantially as set forth.

7. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having slots formed therein of greater width than the thickness of said plate, substantially as set forth.

8. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central portion, said plate having elongated screening slots formed therein, substantially as set forth."

These claims are self-explanatory and need not be specifically considered. It is sufficient to say that the last four claims correspond exactly with the first four, except that they are limited to the employment of slots as the preferred form of screening openings.

The Examiner rejects the 1st and 5th claims on certain U. S. patents, and the remaining claims on those patents taken in connection with a publication which describes applicant's process as applied to the case-hardening of "thin articles", the Examiner's argument being that in view of the latter reference, no invention would be required to case-harden the plates of the several United States patents which he cites.

In his answer to the appeal, the Examiner practically rests on his former letter of February 3rd 1900, in which he says:

"The terms 'very thin' (claims 1 and 5) and 'extreme thinness' (claims 2, 3, 6 and 7) are relative terms without special or definite significance. A plate or screen may be thin or very thin or extremely thin when measured by one standard, and thick or very thick when measured by another. Metal screens having been made from plates of different thickness, as shown by the references before cited, the thickness of plate which applicant has selected for his purpose is merely a matter of degree and devoid of patentable novelty."

We direct the attention of the Examiners in Chief to the fact that subsequent to this letter, and in an effort to meet the Examiner's views, we submitted our amendment of January 24th 1901, in which the meaning of the terms "very thin" and "extreme thinness" was definitely explained, namely as relating "to plates not greater in thickness than .035 of an inch". So far as the references are concerned, they obviously cover plates which are of greater thickness. Heald describes a screen for sifting tacks, Oastler a stone screen, Bates a flaxseed screen, Berthelet a cement screen, and Cross a coal screen. These screens are all used for heavy work and are all much thicker than .035 of an inch. Furthermore, the screens of Heald and Berthelet are of greater thickness than the width of the screening slots, so that these two patents can be disposed of on that consideration alone.

So far as the rejection of claims 2, 3, 4, 6, 7 and 8 is concerned, we submit that it is without justification. The appellant has produced a new article of manufacture consisting of a screening plate which, while having the proper proportions to give a maximum screening effect, is at the same time sufficiently durable for practical use. That invention was made as a result of the discovery that a screen

for the screening of very fine materials should be of even less thickness than the width of the slots, and the further recognition of the fact that screens of this extreme fineness could be made durable and sufficiently tough by a case-hardening operation. We submit, therefore, that the decision of the Examiner should be reversed.

2044
No. 24,089.

U. S. Patent Office, March 15, 1902.

Before the Examiners-in-Chief, on Appeal.

Application of Thomas A. Edison for a patent for an improvement in Fine Screening Plates and Process of Making Same, filed June 29, 1899. Serial No. 722,229.

Messrs. Dyer, Edmunds & Dyer for appellant.

The claims appealed are:

"1. As a new article of manufacture, a very thin metal plate having screening orifices therein of greater width than the thickness of said plate, substantially as set forth.

"2. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with orifices formed therein of a greater width than the thickness of said plate, substantially as set forth.

"3. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having orifices formed therein of greater width than the thickness of said plate, substantially as set forth.

"4. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central portion, said plate having elongated screening orifices formed therein, substantially as set forth.

"5. As a new article of manufacture, a very thin metal plate having screening slots therein of greater width than the thickness of said plate, substantially as set forth.

"6. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with slots formed therein of greater width than the thickness of said plate, substantially as set forth.

"7. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having slots formed therein of greater width than the thickness of said plate, substantially as set forth.

"8. As a new article of manufacture, a screening plate having hardened surfaces and malleable central portion, said plate having elongated screening slots formed therein, substantially as set forth."

The references are patents to

Heald, August 20, 1878, No. 207,173;
 Oastler, March 21, 1882, No. 255,325;
 Bates, April 27, 1886, No. 340,542;
 Berthelot, July 26, 1892, No. 479,617;
 Cross, May 25, 1897, No. 583,032;
 "Workshop Receipts for Manufacturers, &c.", Lock.

The references show screens of thin sheet metal having slots wider than the thickness of the metal.

They are ample as anticipations of those of these appealed claims which rely on that particular of construction.

The operation is the same whether or not the plate be so thin as by the passage before the claims these plates must be. The relative dimensions of the plates and orifices being the same, the operation will be the same regardless of the size of the screen. In other words, a thick screen having been so made, there can be no new invention in making that screen of the same proportions but of diminished thickness.

This applicant is dealing with the separation of grades of very fine material. He finds that the slots of the large screen must be narrowed or all of the material will pass through them. He makes them narrower, thus destroying their old size relatively to the thickness of the old screen, and then finds that the long parallel walls of the narrowed slots cause the fine material to pack in the slots. Thereupon he makes these walls shorter by using thin plates, whereupon, having got back to the proportions of the original screen and obtained it in diminutive size, it works on fine material just as it did when of large size on coarser material.

We find nothing in these claims beyond making an old screen of proper size for the character of the material to be screened.

The other feature of the claims is the case-hardening of the surface of the thin plates to make them strong and durable.

Case-hardening of metal plates is an old process, as is commonly known, and appears by the references cited for these purposes, and its result is the same on thick and on thin plates.

We find no new invention in these claims.

The decision of the Examiner is affirmed.

A. H. Lawrence

J. G. Stevens

} Examiners-in-Chief.

3rd. member absent.

THOMAS A. EDISON
FINE SCREENING PLATES
FILED JUNE 29, 1899
SERIAL NO. 722,229

HONORABLE COMMISSIONER OF PATENTS,

S I R :—

In the above entitled application we hereby appeal to the Commissioner in person from the decision of the Board of Examiners in Chief, who on March 18th 1902 affirmed the decision of the Primary Examiner on all the claims of this application, and in support hereof we assign the following reasons of appeal:

1. The Examiners in Chief erred in deciding that the references of record anticipate the terms of the claims.
2. The Examiners in Chief erred in holding that the references of record anticipate the substance of said claims.
3. The Examiners in Chief erred in not allowing said claims.

An oral hearing is requested.

Respectfully,

Attorneys for Appellant.

New York, March 7, 1903.

All communications should be addressed to:
"The Commissioner of Patents,
Washington, D. C."

H. A. W.

LETTER No.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C.

March 15th, 1903



In the matter of the
Application of

Thomas A. Edison,
Fino Screening Plates
& Process of Making Same,
Filed June 29, 1899,
Ser. No. 722,322.

On Appeal to the Commissioner.

Sir:

You are hereby informed that a hearing on the above
appeal, from the decision of the Examiners-in-Chief, has been
fixed for Thursday, March 26, 1903 at 10 A. M.

By direction of the Commissioner.

Very respectfully,

C. M. Ireland
Chief Clerk.

Thomas A. Edison,

c/o Dyer, Edmonds & Dyer,

231 Nassau Street,

New York, N. Y.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

H. A. W.

Letter No.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C.

March 18th, 1903.

In the matter of the
Application of

Thomas A. Edison,
Fine Screening Plates, &c.,
Filed June 29, 1899,
Ser. No. 722,229.

On Appeal to the Commissioner.

Sir:

You are hereby informed that the hearing on the above
appeal has been continued to Tuesday, April 28, 1903 at 10 A. M.

By direction of the Commissioner.

Very respectfully,

C. M. Dyer
Chief Clerk.

Thomas A. Edison,

c/o Dyer, Edmonds & Dyer,

#31 Nassau Street,

New York, N. Y.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

M. A. W.

Letter No.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C.

April 27th, 1903.

In the matter of the
Application of

Thomas A. Edison

Fine Screening Plates etc.,

Filed June 28, 1898,

IXer. No. 722,229.

On Appeal to the Commissioner.

Sir:

You are hereby informed that the hearing on the above
appeal has been continued to Tuesday, May 5, 1903 at 10 A. M.

By direction of the Commissioner.

Very respectfully,

C. M. Ireland
Chief Clerk.

Thomas A. Edison,

c/o Dyer, Edmunds & Dyer,

Edison Laboratory,

Orange, N. J.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON :
:
FINE SCREENING PLATES :
:
FILED JUNE 29, 1899 :
:
SERIAL NO. 722,229 :

Honorable Commissioner of Patents

Sir:

The undersigned presents an amendment in the above entitled application, which it is respectfully requested may be accepted and entered. The purpose of this amendment is not to change or broaden the invention in any way, but to more clearly and positively identify the invention. While it is necessary, to secure a high screening efficiency, that the thickness of the plates should be less than the width of the screening openings, it is equally important that the plates should be as thin as possible. This feature has always been a part of my invention and I have made oath to that fact by a separate supplemental oath. Unless the amendment is accepted, my invention will not be properly and adequately protected.

Very respectfully,

Thomas A. Edison

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON :
:
FINE SCREENING PLATES : BEFORE THE COMMISSIONER
:
FILED JUNE 29, 1899 : IN PERSON.
:
SERIAL NO. 722,229 :

BRIEF FOR APPELLANT.

The present application involves an invention of Mr. Edison relating to screens for screening very fine materials. The openings are preferably in the form of slots as covered by Edison patent No. 675,057 dated May 28, 1901.

Prior to Mr. Edison's invention, the screening of very fine materials was an operation which was always attended by serious difficulties since the efficiency of the screens was extremely low. While with very coarse screens the efficiency might be fairly good, yet with very fine screens, measured in tenths, hundredths and thousandths of an inch, the efficiency would only be a small fraction of that secured with coarse screens. These low efficiencies in very fine screens have been accepted by manufacturers apparently as inevitable.

Under the old practice followed by manufacturers prior to Mr. Edison's invention and even at the present time, the openings in the screens were and are produced by means of punches, the thickness of the metal used being relatively great, and being determined largely by the capacity of the punches. In the case of extremely fine screens, the metal selected, was, in thickness, frequently double the width of the slots, and as the mesh was increased, the thickness of metal was also increased, but not in the same ratio, so that with coarser screens the thickness of the plates was equal to the width of the slots, while with very coarse screens, the slots were several times wider than the thickness of the plates. In every instance however, the plates were relatively

thick and were always selected with reference to durability and not to efficiency. These facts appear from the affidavit of Mr. Chapman submitted herewith,

As a result of experiment, Mr. Edison discovered that in order to secure an efficient screening operation, a definite relation between the thickness of the plates and the size of the screening openings must be observed. In other words, he found that the plates should not only be thinner than such width, but that the plates in fact should be made of the minimum practical thickness, the only limitations being the commercial possibility of securing the plates of sufficient thickness and that their strength should be sufficient to properly sustain the load. This increase of efficiency is not to be measured by mere fractions, but is in fact, frequently as high as eight times that secured with fine screens antedating the invention. These facts are also explained from Mr. Chapman's affidavit, who points out the remarkable peculiarity of Mr. Edison's screens, namely, that although very much thinner than any screens heretofore proposed, they are just as durable as the much thicker screens, so far as concerns the total bulk of material which passes through them in their life-time.

In the original application, the specific character of the invention was not as clearly set out as it should have been. The invention consists of more than merely making the plates thinner than the width of the screening openings, but consists in making the plates of a minimum thickness so long as they give proper support to the lead, and preferably many times thinner than the width of the screening openings. A proposed amendment is submitted herewith, bringing out this fact and suggesting three substitute claims, the amendment being supported by a proper supplemental oath. It is hoped that this amendment may be accepted, and that the new claims will be considered on this appeal.

It is not necessary to consider the references in detail since it is evident that they do not show instances of the use of metal of a minimum practicable thickness, and hence do not anticipate, in substance at least, Mr. Edison's invention.

It is obvious that in the patents to Heald and to Berthelet, the thickness of the plates is greater than the width of the screening openings, so that these patents may be dismissed at the outset as having no bearing on the appealed claims. In fact it would appear to be Heald's idea, to make the slots with long parallel walls as shown in Figure 3 of his patent. So far as the patent to Bates is concerned, it is not possible to say with that degree of certainty necessary in the case of a reference, that the screening openings are wider than the thickness of the plates. Nothing is said in the patent as to the importance of this ratio, and in the drawings the screens O and R are certainly shown as being thicker than the size of the openings. Apparently the screen M is thinner than the width of the slots M', but these proportions may be due to the caprice of the draftsman. Whether this is so or not, it is clear that the thickness of metal used by Bates is certainly many times thicker than that which might be used. Furthermore, attention is called to the fact that with the only slotted screen of the Bates patent, the slots extend transversely of the travel of the material, and hence are no more efficient than round holes.

So far as concerns patents to Oastler and to Cross, both of these references relate to ordinary coarse screens, which in practice with one inch slots, are made of metal about five-sixteenths of an inch, the width of the slots being somewhat less than four times the thickness of the plates. With coarse screens of this size, Mr. Edison has used metal only one-thirty-second of an inch in thickness, the width of the slots being 32 times the thickness of the plates, and the efficiency of the screens has been increased.

ed more than six fold. It is evident that all the references illustrate the common practice referred to in the affidavits of Mr. Edison and Mr. Chapman, the manufacturer merely selecting a suitable metal capable of being readily punched, apparently solely with reference to durability and without any regard whatever for efficiency. Yet as above pointed out, the use of thicker metal does not result in an increase of durability, so that the Edison screens are not only cheaper, more efficient, and more rapid in operation, but they are also just as durable when the total bulk of material which passes over them is considered.

The Examiners-in-Chief, in their decision state that the references "show screens of thin sheet metal having slots wider than the thickness of the metal." While these proportions, speaking generally, may be observed in the patents to Cross and to Castler, it is evident that when the Edison invention is considered in its final analysis, it is not anticipated. No one so far as is known, prior to Mr. Edison, ever made the observation that the plates should be of the minimum thickness so as to thereby secure a screen of equal durability and of enormously greater capacity.

The Examiners-in-Chief further state:

"The relative dimensions of the plates and orifices being the same, the operation will be the same, regardless of the size of the screen. In other words, a thick screen having been so made, there can be no new invention in making that screen of the same proportions but of diminished thickness.

This applicant is dealing with the separation of grades of very fine material. He finds that the slots of the large screens must be narrowed or all of the material will pass through them. He makes them narrower, thus destroying their old size relatively to the thickness of the old screen, and then finds that the long parallel walls of the narrowed slots cause the fine material to pack in the slots. Thereupon he makes these walls shorter by using thin plates, whereupon having got back to the proportions of the original screen and obtained it in diminutive size, it works on fine material just as it did when of large size on coarser material."

This argument of the Examiners-in-Chief is a mere assumption which has no real basis in fact. While with the Edison invention before them, it might seem to be a simple

and obvious thing to make the plates of extremely thin material, yet the fact remains that that was never done, and manufacturers of fine screens, without a single exception, always employed relatively thick material in the construction of such screens. This fact very clearly appears not only from the affidavits of Mr. Edison and Mr. Chapman, but also from the catalogue of the Allis-Chalmers Co., one of the largest manufacturers in the world, of screens of all sorts. The true explanation of the case is that no one prior to Mr. Edison ever discovered the cause of the low efficiency of very fine screens. If it was generally known by manufacturers that the reason why fine screens were so inefficient was because the plates were too thick, it might be admitted that no invention would be required to make the plates thinner. In that case however, there would probably be no necessity for the present appeal, because the Examiner would then have had no difficulty in finding complete anticipations, as it is inconceivable that manufacturers of fine screens knowing how their efficiency might be increased, would content themselves with the manufacture of fine screens which were of very low efficiency. When the microscopic character of fine screens is considered, it is submitted that the inward eye of the imagination was required to produce the invention here claimed rather than the exercises of ordinary mechanical skill or judgment as suggested by the Examiners-in-Chief. It is thought therefore that the claims should be allowed.

Respectfully submitted,

THOMAS A. EDISON

By

Frank L. Rice
his Attorney.

IN THE UNITED STATES PATENT OFFICE.

THOMAS A. EDISON	:	
FINE SCREENING PLATES	:	BEFORE THE COMMISSIONER
FILED JUNE 29, 1899	:	IN PERSON.
SERIAL NO. 722,229	:	

Affidavit of Cloyd M. Chapman.

State of New Jersey S.S.
County of Essex

Cloyd M. Chapman, having first been duly sworn on oath doth depose and say as follows:-

I am by profession a mechanical and mining engineer and was educated at Cornell University. For more than four years past, I have been employed by Mr. Edison as a mining engineer and during that time have been almost continuously employed on experiments relating to mining processes and involving the screening of fine materials. These experiments were conducted by me at the Edison Laboratory, Orange, New Jersey, and also in New Mexico. In these experiments, I determined conclusively, that in the screening of very fine material, the use of thin plates permits of a much more efficient screening operation, than when the screening openings are formed in relatively thick plates. For instance, with screens having .01 inch openings, formed in plates say .02 inch in thickness, the efficiency is no more than 20 % of that secured when the screen plates are about .006 inch in thickness. The best results were secured where the plates were as thin as possible, although of course, there is a limit to the possible thinness of the plates to make them strong enough to carry the load of material.

Steel or iron plates less than .006 inch in thickness are not now available, and in this material screening slots have been formed, ^{by Edison} ranging from .009 to .050 inch. In the first case (.006 to .009) the plates have been two-thirds

as thick as the width of the slots, and in the latter case (.006 to .150) the plates have been only one-twenty-fifth as thick as the width of the slots. The highest efficiencies are secured when the plates are many times thinner than the slots are wide; in fact, the plates should be of the minimum thickness. In the case of the .009 inch screen, greater efficiency would be secured with metal only .001 inch or less in thickness, but such metal cannot be obtained. I have however, used brass plates only .003 inch thick with increased efficiency.

I have found as a result of my experiments, that with very fine screens ranging from .009 inch upwards, in width of the screening openings, the efficiency is just as high as with very much coarser screens, provided the proper ratio of thickness of plate to width of screening opening is maintained. In the practical manufacture of fine screening plates, it is not yet known by manufacturers other than Mr. Edison that the ratio between the thickness of the plates and the width of the slot has anything to do with the efficiency of the screen. It is the aim in fact of all manufacturers of fine screening plates to use relatively thick metal, apparently in order to secure the greatest durability. The thickness of metal employed by other manufacturers depends largely on the capacity of the punches, it being obvious that a very fine, relatively sharp punch must be used on thinner metal than coarse punches, and also that slot punches can be used on coarser metal than round hole punches. An example of the present practice followed by the manufacturers of screen plates, is shown in catalogue of Allis-Chalmers Co., which I attach hereto and mark Exhibit A. The Allis-Chalmers Co., is one of the largest and best known manufacturers of screen plates in the world. On page 13 of this catalogue is given "A Table for Punching Needle-Slot-Screens", which are the kind of screens particularly refer-

rod to by Mr. Edison in his patent application. These needle-slot-screens vary in width of slot from .0135 inch up to .058 inch and the thickness of the metal varies from .022 of an inch to .065 inch. In every case, the metal is considerably thicker than the width of the slots. If the Allis-Chalmers Co., had appreciated the important results which are derived from the use of excessively thin plates they would punch their .058 inch screens in metal .022 of an inch or less, in thickness, since by doing so they would produce a screen having a much greater capacity and efficiency than the screen which they sell. The Allis-Chalmers Co., however, merely follow the accepted practice and since their .058 inch punches are capable of perforating thicker metal than their .0135 inch punches, they use the thicker metal in preference to the thinner metal. The fact that all manufacturers before Mr. Edison selected material largely with reference to the capacity of their punches instead of with regard to the efficiency of the screens, is illustrated by the table on page 34 of this catalogue, in reference to round hole screens. A round or square punch is obviously less capable of perforating a sheet of a given thickness than a slot punch. Consequently the maximum thickness of metal which can be used in a round hole screen is less than with a needle-slot-screen. This fact is shown for instance by the .05906 inch screen referred to on page 34 of the catalogue. The width of the screening openings in this screen is only about .001 of an inch more than that of the .058 inch screen referred to on page 13. Yet in the case of the needle-slot-screen the thickness of metal used is .065 inch, while in the case of the round hole screens the thickness of metal used is .049 inch.

The use of relatively thick metal by the Allis-Chalmers Co., and all other manufacturers, does not secure relative durability, since the efficiency is so low that the load of material has to be passed over the screens for a correspond-

ingly greater period of time, and consequently the wear is very rapid. Thus with an Edison screen having six times the efficiency of an Allis-Chalmers screen, only one sixth the material requires to be passed over the former to secure the same bulk of screened material as the latter, and, speaking generally, the wear will be only one-sixth as great, and consequently the plate may be made only one-sixth as thick. A relative reduction of the metal to this extent would result in a greater increase in efficiency than 600 per cent, so that the Edison screen is fully as durable, if not more so, than the old screens.

The Allis-Chalmers Co., catalogue referred to was published in February 1892, and was received at the Edison Laboratory in April of that year. So far as I know, no one prior to the date of Mr. Edison's application, other than Mr. Edison ever made a very fine screen in which the plate was thinner, and preferably very much thinner than the width of the screening openings, or observed that the ratio between the thickness of plate and width of slots, has any bearing on the question of efficiency.

Cloyd K. Chapman

Sworn to and subscribed before me this 1st day of
May 1903.

Thomas L. Hays

ROBERT J. KELLY, STATE OF NEW JERSEY
COMMISSIONER FROM FEBRUARY, 1903.

IN THE UNITED STATES PATENT OFFICE

THOMAS A. EDISON :
FINE SCREENING PLATES : BEFORE THE COMMISSIONER
FILED JUNE 29, 1899 : IN PERSON.
SERIAL NO. 722,229 :

Affidavit of Thomas A. Edison.

State of New Jersey S.S.
County of Essex

Thomas A. Edison, on oath doth depose and say as follows:

I am the applicant above named, I have read the affidavit of Cleyn M. Chapman, verified on the ^{29th} day of ~~April~~ ^{May} 1903, and find that Mr. Chapman has correctly stated the facts in reference to my invention and also in reference to the practice followed by other manufacturers of fine screens at the present time, and for years prior to my invention.

As a practical instance of the practice followed by other users and makers of fine screens, I recall the following incident:

About the time that the above application was filed, I used a large number of fine screens involving the invention here claimed, at my ore milling plant at Edison, N. J. Very superior results were secured with those screens; in fact the efficiency was very much higher than with any screens then known. The New Jersey Zinc Co., had a plant located at Franklin, N. J., a few miles from Edison, and were using ordinary fine screens punched in relatively thick plates but with very poor results. Officers of the New Jersey Zinc Co. frequently complained to me of the poor efficiency of their screens and were always surprised to hear of the high efficiencies which I was securing. I finally loaned the New Jersey Zinc Co., a set of my screens, and told them to have the

screens reproduced, either on the instructions of the Zinc Co., or on the manufacturers judgement, the reproduced screens made for the company were constructed of considerably thicker metal than the set which I loaned the company, so that when installed they were as inefficient as those previously used. Neither the Zinc Co., nor the manufacturer of their screens could explain the loss in efficiency, and finally attributed the loss to differences in material, and in conditions of operation. It was not until I examined the screens thus installed by the Zinc Co., that I saw what the trouble was.

Thomas A. Brown

Sworn to and subscribed before me this 4th day of
May
April 1903.

Oran L. Ryan

NOTARY PUBLIC
STATE OF CALIFORNIA
My Comm. Expires 1904

UNITED STATES PATENT OFFICE

THOMAS A. EDISON :
FINE SCREENING PLATES :
FILED JUNE 29, 1899 :
SERIAL NO. 722,229 :

HONORABLE COMMISSIONER OF PATENTS

SIR:

I desire to amend the above entitled application by erasing from line 11, page 1, to Line 26, page 2, including the matter introduced by amendment of Jan 25th, 1901 and by substituting the following:

----- Fine screening plates constructed prior to my invention and ranging in mesh or width of screening openings below .2 inch, have been of extremely low efficiency. With such screens only from 10 to 20 % of particles sufficiently fine to pass through the screening openings, would in fact pass through such openings. These low efficiencies were regarded as necessarily characterizing very fine screens. With the prior screens, the screening openings in the form of round or square holes or slots, have been punched in metal plates, the thickness of which has been largely determined by the capacity of the punches. Obviously, the cutting capacity of a punch is determined by the ratio between the cross sectional area and the perimeter of the opening, and consequently a round hole punch of the same diameter is more efficient than a square hole punch of the same diameter, while a slot punch is still more efficient. For this reason, it is a fact that with fine screens constructed prior to my invention and having reference to any particular mesh, slot screens have been of thicker metal than round hole screens, which in turn have been thicker than square hole screens. In the prior practice, manufacturers have not necessarily used the very thickest metal which

can be perforated by the different punches, but apparently, having in mind the single question of durability, the prior screens have been formed in sheets as thick as practicable. It may be stated generally, as illustrating the practice followed before my invention, that with screens of a minimum mesh, plates of a maximum relative thickness have been employed, sometimes almost double the width of the screening openings, while as the mesh increases the proportionate thickness of the plates has not been retained, so that in the case of considerably coarser screens, the width of the screening openings becomes equal to the thickness of the plates, while in the case of very coarse screens (say an inch or more in mesh), the width of the screening openings is several times greater than the thickness of the plates. In this practice however, manufacturers have been guided solely by the question of durability and not of efficiency, and so far as I know, no one prior to my invention ever suggested the cause of the low efficiency of fine screens or observed that the thickness of metal used in proportion to the width of the screening openings determines, in any way, the efficiency of the screen.

I have determined from experiment that the screening capacity of a screen plate depends almost entirely upon the thickness of the plate and have found that in order to secure the maximum efficiency the plates should be of the minimum thickness, preferably very much thinner than the width of the screening openings. At the present time sheet iron or steel cannot be secured in plates of an available size, thinner than .006 of an inch, and in this material I have formed screening openings ranging from .009 of an inch up to .15. In the latter case the thickness of the plates has been only one-twenty-fifth of the width of the screening openings, while in the case of the .009 inch screen, the thickness of the plate is two-thirds the width of the screen-

ing openings. In the case of the screen last referred to, it is impracticable at the present time to use metal less than .006 inch in thickness because thinner metal is not available, but more efficient results could be secured if metal only .001 of an inch or even less could be obtained. The possible thinness of metal which can be actually used is determined also, to a certain extent, by the character of material being screened, it being obvious that in the screening of a very gritty, erosive material like iron ore, the wear on a very thin plate would be more objectionable than in the case of a soft material such as a ground Portland Cement mixture or "chalk", previous to calcination. When, however, the plate is thick enough to resist ordinary wear and strong enough to support the load, I find that the question of durability is unimportant, since the enormously greater efficiency of the screens makes their cost practically negligible. For example, in one set of screens which I have used in practice, I passed more than 50,000 tons of material over each screen before the latter became worn sufficiently as to require removal, and each screen was then replaced at a cost of less than \$2.00. Moreover, I find that when the attempt is made to secure durability by the employment of thicker metal, the efficiency of the screen is so reduced that although the screen lasts longer, no more material passes through it before it becomes worn out, than would be the case with a very thin screen of much greater efficiency. For this reason, my improved fine screens when made of metal as thin as practicable to give the necessary strength, are not only enormously more efficient and consequently more rapid in action, but are as durable as far as capacity is concerned, as the very much thicker screens which were made prior to my invention.

My invention therefore consists of a screen formed with screening openings, preferably slots, in a metal plate of the minimum practicable thickness, whereby its efficiency

will be greatly increased without a proportionate sacrifice of durability, and the invention preferably consists of such a plate having a case hardened screening surface, and a malleable central portion, all as I shall herewith describe and claim.

It is the object of my invention to obtain a very high screening capacity resulting from the use of plates of a minimum practical thickness without a proportionate sacrifice of durability.

In order that my invention may be better understood, attention is directed to the accompanying drawing forming a part of this specification, and in which Figure 1, is a cross sectional view of a screen plate embodying my present invention and Figure 2, a similar view illustrating the preferred process which I carry out for the partial hardening of such plates.

In both of the above drawings corresponding parts are represented by the same letters of reference.

A, represents a thin sheet iron plate suitably hardened as I will explain, provided with orifices, preferably slots a, therein. The relation between the thickness of the plate A and the width of the orifices a, is such that the former dimension is less, and preferably very much less, than the latter. In the specific instance illustrated, I show a plate which is indicated as being .006 of an inch in thickness and having slots a, therein, which are indicated as being of a width each of .009 of an inch. This screen may be considered as representing the minimum width or fineness of mesh and as representing the maximum ratio between the width of slot and the thickness of the plate. I have pointed out, that at the present time, metal less than .006 of an inch in thickness is not available, but if such metal could be secured it should be employed. From this minimum width of slot, the screens may be increased in mesh without an increase in thickness of metal. With some materials, a screen having a

15. inch mesh can be formed in the same plates. The best results are secured in practice when the width of the screening openings is not only greater than the thickness of the plates, but when such width is many times (30 or more) greater than such thickness.

The reason why my improved screens are more efficient than the screens used prior to my invention, is that with the latter, the thicker plates become clogged with particles of the material in process of screening, thus reducing the screening capacity in a very short time, to almost nothing, whereas, if the plate is much less in thickness than the width of the slots, it does not become clogged and can be operated for weeks without cleaning.-----

Cancel the claims and substitute the following.

(1) As a new article of manufacture, a screen having openings formed in a plate of minimum thickness, less than the width of said openings, and sufficient only to offer proper support to the material passed over the same, substantially as and for the purpose set forth.

(2) As a new article of manufacture, a screen having slots formed in a plate of minimum thickness, less than the width of said openings, and sufficient only to offer proper support to the material passed over the same, substantially as, and for the purposes set forth.

(3) As a new article of manufacture, a screen having openings formed in a plate of minimum thickness, less in width than said openings, sufficient only to offer proper support to the material passed over the same, and having a hardened screening surface and a malleable central portion, substantially as and for the purposes set forth.

A supplemental oath is filed herewith, in order to

meet any possible objection to the amendments above made.

Very respectfully,

THOMAS A. EDISON

by *Samuel L. Allen*
his Attorney.

Orange, N. J., May 4, 1903.

State of New Jersey
County of Essex

S.S.

THOMAS ALVA EDISON, whose application for letters patent for an improvement in FINE SCREENING PLATES, Serial No. 722,229 was filed in the United States Patent Office on the 29th day of June 1899, having been duly sworn, deposes and says that the subject-matter of the foregoing amendment was part of his invention, was invented before he filed his original application, above identified, for such invention, was not known or used before his invention, was not patented or described in a printed publication in any country more than two years before his application, was not patented in a foreign country on an application filed more than seven months before his application, was not in public use or of sale in this country for more than two years before the date of his application, and has not been abandoned.

Thomas A. Edison

Sworn to and subscribed before me this 4th day of
May, 1903.

Thomas L. Agnew

NOTARY PUBLIC IN AND FOR THE STATE OF NEW JERSEY
COMMISSION EXPIRES FEBRUARY 1908

May 8, 1903.

N.L.H.

United States Patent Office.

Ex parte Thomas A. Edison.

Fine Screening Plates.

Appeal from Examiners-in-Chief.

Application filed June 29, 1899, No. 732,229.

Mr. Frank L. Dyer for applicant.

This is an appeal from a decision of the examiners-in-chief affirming the rejection by the examiner of the following claims:

- "1. As a new article of manufacture, a very thin metal plate having screening orifices therein of greater width than the thickness of said plate, substantially as set forth.
- "2. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with orifices formed therein of a greater width than the thickness of said plate, substantially as set forth.
- "3. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having orifices formed therein of greater width than the thickness of said plate, substantially as set forth.
- "4. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central portion, said plate having elongated screening orifices formed therein, substantially as set forth.
- "5. As a new article of manufacture, a very thin metal plate having screening slots therein of greater width than the thickness of said plate, substantially as set forth.
- "6. As a new article of manufacture, a screening plate made of hardened metal of extreme thinness and with slots formed therein of greater width than the thickness of said plate, substantially as set forth.
- "7. As a new article of manufacture, a metal plate having a hardened screening surface but with a malleable central portion, said plate being of extreme thinness and having slots formed therein of greater width than the thickness of said

plate, substantially as set forth.

"8. As a new article of manufacture, a screening plate having hardened surfaces and a malleable central portion, said plate having elongated screening slots formed therein, substantially as set forth."

The references are as follows:

Heald,	August 20, 1878,	No. 207,178;
Oastler,	March 21, 1882,	No. 288,328;
Rates,	April 27, 1886,	No. 340,542;
Berthelst,	July 26, 1892,	No. 479,617;
Cross,	May 28, 1897,	No. 583,032;

"Workshop Receipts for Manufactures, &c" Lock.

These patents show screens made of sheet metal and they are provided with openings which are wider than the thickness of the plate.

In some of these patents the openings are formed in the shape of slots and in these the width of the slots is greater than the thickness of the metal plate. The applicant contends that in his invention the width of the openings in the plate has a ratio to the thickness of the plate, but that the plate must be as thin as possible, its thickness being limited only by its capacity to support the material being screened. These alleged differences are ones of degree merely, and do not amount to invention.

The case hardening of the metal plate is a common expedient as shown by the references cited by the examiner and its result is well known. This feature does not confer patentability on claims which include it.

The decision of the examiners-in-chief is affirmed.

A. J. Allen
Commissioner.

May 26, 1903.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

LETTER No.

H. A. W.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C.

May 27th, 1903.

In the matter of the
Application of

Thomas A. Edison
Fine Screening Plates &
Process of Making Same.
Filed June 29, 1899,
Ser. No. 722,299.

On Appeal to the Commissioner.

Sir:

You are hereby informed that the decision of the
Examiners-in-Chief has been affirmed by the Commissioner.

Please find enclosed herewith a copy of the decision.

By direction of the Commissioner.

Very respectfully,

D. N. Mortimer
Acting Chief Clerk.

Thomas A. Edison,

c/o Frank L. Dyer,

Edison Laboratory,

Orange, N. J.

Case No. Paper No.

Folio No. 3

Serial No. 724

Applicant.

Address.

Title.

Filed

Examiner's Room No.

Assignee

Ass'g't Exec.

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Page

Patent No.

Issued

ACTIONS.

1. 1894
2. 1895
3. 1896
4. 1897
5. 1898
6. 1899
7. 1900
8. 1901
9. 1902
10. 1903
- 11.
- 12.
- 13.
- 14.
- 15.

FRANK L. DYER,

Counsel,

ORANGE, NEW JERSEY.

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
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RICHARD N. DYER,
REGISTRATION NO. 488.
SAMUEL O. EDMONDS,
REGISTRATION NO. 419.
FRANK L. DYER,
REGISTRATION NO. 446.

*This is only a
Copy and return*

Petition.

To the Commissioner of Patents:

YOUR PETITIONER, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT IN COMBUSTION ENGINES

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

THOMAS A. EDISON.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN COMBUSTION ENGINES (Case No. 1010), of which the following is a description:

My invention relates to improvements in combustion engines, and my object is to produce a relatively simple device wherein high efficiency may be secured.

In an application for patent filed by me February 27, 1899, Serial No. 706,976, I describe an improved device whereby heat may be imparted to compressed air by directing a portion of the air through an enclosed source of burning combustible, and preferably by directing the remaining portion of the compressed air into proximity with the source of burning combustible so as to be heated therefrom by radiation and convection, the portions of the air so directly and indirectly heated being reunited and being used for any industrial purpose. I have discovered that the heat so imparted to compressed air results in a very great increase of the efficiency thereof, whereby I am enabled to utilize the air so heated in an engine cylinder for the performance of useful work, and to operate by said cylinder a compressor for the compression of the air. By thus compressing air under favorable conditions and utilizing it in an efficient engine cylinder, I am enabled, by interposing a suitable heating device between the compressor and said engine cylinder, to secure a very considerable surplus energy at the shaft, and

thereby obtain a combustion engine wherein a relatively large percentage of the energy derived from the burning combustible may be converted into useful work.

My invention therefore consists in the combination with an air compressor, of an air motor or engine connected thereto and driving the same, and a heating device interposed between the compressor and motor, and by which air compressed by the compressor may derive heat directly, and preferably also indirectly, from a source of burning combustible, the added efficiency thus imparted to the compressed air serving to operate the motor with a sufficient excess of power as to be utilizable in the accomplishment of work.

In the preferred embodiment of my invention, I employ a single-acting compressor and a single-acting engine or motor, both connected to a single shaft, the heating device being carried adjacent to the cylinders of both the engine and compressor, whereby a very simple, compact and light apparatus will be secured.

In order to improve the efficiency of the apparatus, I employ roller or wheel bearings for the shaft and for the cross-heads of the compressor and motor, and by means of which friction will be reduced to a minimum.

In order that the invention may be better understood, I have illustrated in the accompanying drawings a good form of my present invention, and wherein figure 1 is a plan view; figure 2 a side elevation; figure 3 an end view; figure 4 a longitudinal section through the shaft and engine cylinder; figure 5 a section taken at right-angles to figure 4, the line of section being through the inlet valve of the engine; figure 6 a view taken on line 6--6 of figure 4; figure 7 a section through the compressor; figure 8 a sec-

tion on line 8--8 of figure 7; figure 9 a vertical section through the heater; and figure 10 a diagrammatic view, showing the regenerator.

In all of the above views, corresponding parts are represented by the same numerals of reference.

1 represents a base, preferably cast, from which is carried a plate 2 by the standards 3, 3. The plate 2 carries a compressor cylinder 4, an engine cylinder 5, and a heater 6. The compressor is preferably of the single-acting type, its cylinder being provided with a long plunger piston 7 therein, said piston having a series of concentric grooves 8 to form an air packing. The piston rod 9 of the compressor connects with a cross-head 10 carrying the anti-friction rollers 11, which work in the guides 12 bolted preferably with the plate 2, said guides being connected at their lower ends by the braces 13. The anti-friction rollers 11 are made as large as possible in order to reduce friction to a minimum. The connecting rod 14 of the compressor connects the cross-head 10 with the crank 15 of the shaft 16. The top of the compressor cylinder 4 is provided with a cast head 17 made hollow (see figure 7), with a diaphragm 18 separating the inlet and discharge chambers. The inlet chamber is provided with a port 19 opening into the cylinder and normally closed by an inlet valve 20 of well known form, the valve and its casing being introduced into the inlet chamber through the plugged opening 21. In the outlet chamber is normally seated a discharge valve 22, which may be introduced through the plugged opening 23. Both the inlet valve and discharge valve 20 and 22 respectively are normally maintained seated by spring pressure, as shown.

The engine cylinder 5 is, like the compressor, also preferably single-acting, and is provided with a jacket 24

and a plunger piston having a suitable air packing, as shown. Preferably this piston is filled with a packing of mineral wool or other suitable non-conducting material, as illustrated, in order to prevent loss of heat by radiation. The piston rod 25 of the engine cylinder connects with a cross-head 26 similar in all respects to the cross-head 10 and provided with antifriction rollers 27 which work in the guides 28. The connecting rod 29 connects the cross-head 26 to the crank 30 on the shaft 16. The cranks 15 and 30 are preferably so disposed that as the engine piston starts on its operative or down stroke, the piston 7 of the compressor will start on its operative or up stroke, the intention being to oppose the greatest resistance at the compressor with the greatest effective energy at the engine cylinder. The engine cylinder 5 carries a relatively small valve casing 31 provided with an inlet opening 32 connected with the ports 33, 33, as shown. Leading into the engine cylinder 5 is an inlet port 34, and normally covering said port is a piston valve 35 which works in the valve casing 31 between the ports 33, 33, whereby the said piston valve will be always balanced in said valve casing. The valve 35 is operated by an air-packed valve rod 36 connected at its outer end to an arm 37 mounted on the rock shaft 38, said rock shaft carrying an arm 39, which connects by a rod 40 with a lever 41 having an antifriction roller 42 at its end working on a cam 43 carried by the shaft 16. *The front of the lever 41 is curved to suit the supporting bracket 44.* A spring 44 maintains the roller 42 always in contact with the cam 43. The cam 43 is so formed that at each rotation of the shaft 16, the valve 35 will open and close the inlet port 34, the opening taking place at the commencement of the down stroke of the piston, and the closing of the inlet port being effected after the piston has partially completed that stroke, whereby

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an expansion effect will take place, as will be explained. The engine cylinder 5 is provided with an exhaust port 45 normally covered by a valve 46. The stem of the valve 46 connects with a lever 47, the other end of which connects by a rod 48 to an arm 49 carried on the rock shaft 50. An arm 51 on the other end of this rock shaft connects by a rod 52 with a lever 53 carrying a roller 54 which works on the cam 55 also carried by the shaft 16 at the side of the cam 43. ^{The lever 53 is carried by the rock shaft 50} A spring 56 is employed to keep the roller 54 in constant engagement with the cam 55. The cam 55 is so proportioned as to open the valve 46 on the up stroke of the engine piston, and to keep it open during the entire up stroke. If desired, an exhaust pipe 57 may connect with the exhaust port 45 and lead to any desired place, the lever 47 working in a slot in said pipe. Preferably, however, the exhaust pipe 57 leads through a regenerator, as shown in figure 10, and as will be explained, whereby a saving in the operation will be effected, by absorbing heat from the products of the exhaust.

^{Sketch} The heater 6 is of the general type described in my application for patent before referred to. It consists of a cylinder 58 provided with a grate or grid 59 therein, on which is placed a quantity of preferably solid combustible ^{such as very fine pea or anthracite coal or coke.} I prefer to use a solid combustible for this purpose, since the products of combustion are practically free from deposit, and hence do not clog or otherwise interfere with the proper operation of the motor. The cylinder is provided with a bottom 60 bolted in place and having a central opening therein through which ash may be removed. This opening is adapted to be closed by a cover 61 secured in place by a screw 62 working in a bridge-piece 63. The top of the cylinder

58 is provided with a similar cover 64 secured in position in the same way. Surrounding the cylinder 58 is a jacket 65, whereby a heating chamber 66 will be formed on the outside of said cylinder. A pipe 67 leads into said heating chamber at one side, and a pipe 68 leads out of the said chamber diametrically opposite thereto. A by-pass pipe 69 leads from the pipe 67 into the bottom 60 of the heater, and a corresponding pipe 70 leads from the top of the heater into the pipe 68. A valve 71 is interposed in the pipe 67 so as to cause a drop in the pressure between the pipe 67 and the pipe 68, and thereby produce a flow of air through the by-pass pipe 69, heater 6 and pipe 70. The pipe 69 is preferably provided with a valve 72 therein, which may be closed when a new quantity of combustible material is to be placed within the cylinder 58.

The arrangement of piping when a regenerator is not used is shown particularly in figure 1. An inlet pipe 73 leads to the inlet chamber of the compressor, and an outlet pipe 74 leads from the outlet side of the compressor to a suitable receiver or reservoir 75, in which a supply of compressed air will be maintained. I prefer to use a receiver or reservoir interposed between the compressor and heater in order that smoothness of operation may be secured, and to prevent the heater from being directly subjected to the intermittently recurring action of the compressor. The receiver 75 acts in the apparatus in very much the same way as the air cylinder of a force pump, allowing a practically uniform flow of air at a substantially constant pressure to pass into the heater. From the receiver or reservoir 75 the pipe 67 leads to the heater, and from the heater the pipe 68 leads into the jacket 24 of the engine. From the jacket 24 at a diametric point a pipe 76 leads to the valve chamber 31 of the engine.

Instead of connecting the exhaust pipe 57 directly with the atmosphere, I prefer to direct the exhaust through a regenerator interposed between the receiver or reservoir and the heater, in order that heat may be absorbed from the products of the exhaust and an economy in that respect thereby effected. Such an arrangement is shown particularly in figure 10, wherein the pipe 67 is divided into a plurality of branches 77, each branch being provided with a jacket 78 connected with the exhaust pipe 57, as shown. In this way, most of the heat carried by the products of the exhaust will be absorbed by the relatively cold air passing from the receiver to the heater. I prefer to employ a regenerator of this general type, wherein the hot exhaust air travels in an opposite direction from the incoming cold air, since in this way the exhaust air will during its passage through the regenerator be constantly subjected to fresh quantities of cold air and the heat will be more effectively extracted therefrom than if the reverse operation took place.

In the operation of all hot air engines with which I am familiar and which, so far as I know, offer the closest analogy in general type to my present device, the effective horse power at the shaft has been always enormously lower than the indicated horse power in the cylinder. This loss of power is due to the friction which is necessarily generated in engines having a relatively large mass. In order that an economy may be effected in this respect, I provide the working parts of my improved engine with wheel or roller bearings, whereby friction will be very greatly reduced. To this end, I provide the cross-heads of the engine and compressor cylinders with wheel or roller bearings, as I have already explained, and I interpose between the upper ends of the connecting rods of both the engine and compress-

or and the respective cross-heads thereof a roller bearing 79 (see particularly figures 4 and 5), and between the lower end of said connecting rod and the respective crank a roller bearing 80 is used, and I carry the main shaft 16 in wheel or roller bearings 81 mounted in dust-proof boxes 82 (see figure 4). In order further to reduce friction, I dispense with packing rings on the pistons of the engine and compressor cylinders and utilize instead thereof the concentric grooves already described, which constitute air packings, and I finally prefer to air-pack the stem 36 of the main engine valve for the same reason, and also the valve itself, as shown. By thus dispensing with all friction-creating packings, and by providing the working parts of the engine with wheel or roller bearings, as explained, I am enabled to produce a device of this general type, wherein a very much less disparity between the effective and indicated horse powers will be secured than with any hot air or similar engine heretofore constructed.

In order to secure uniformity of rotation of the shaft 16, I employ one or more fly-wheels secured to said shaft, as shown.

The operation of the device will be as follows:- A suitable, preferably solid, combustible, of which instances have been given, is placed on the grid or grate 59 of the heater 6, and said combustible is ignited in any suitable way, as for instance by burning waste, after which the cover 64 is placed in position and clamped down so as to exclude exterior air from the cylinder 58. The shaft 16 is now given a few turns by hand or in any other suitable way, and the compressor will be started. At each down stroke of the compressor, air will be drawn through the pipe 73, past the valve 20 into the compressor cylinder, and on each up stroke

the air will be forced out through the valve 22 into the reservoir or receiver 75, and the air therein will be placed under pressure. In order to increase the efficiency of the compressor, it is obvious that it should be maintained as cool as possible, whereby the heat due to compression may be permitted to radiate therefrom. For this purpose it may be cooled by a water jacket in the well known way, but preferably it is provided with a series of cooling wings 83 (figure 8), as is common. The compressed air from the reservoir or receiver encounters a resistance at the valve 71, and a part of the air will therefore be forced through the pipe 69 into the cylinder 58 in direct contact with the burning combustible material, and heat therefrom will therefore be imparted directly to the air. The air from the chamber 58 passes out through the pipe 70, and in entering the pipe 68 meets and mingles with the remaining portion of the air from which it was deflected, which portion has reached the pipe 68 by passing through the heating chamber 66 around the cylinder 58. In passing through the heating chamber, the air will be heated by radiation and convection, as will be understood. By regulating the valve 71, any desired drop in pressure may be produced between the pipe 67 and the pipe 68, and in consequence any desired quantity of the air may be deflected to the heater. I find from experience that it is only necessary to deflect through the heater a very small quantity of the air, only sufficient to support combustion, but that the amount of heat absorbed directly therein will be a very much greater proportion than will be absorbed by the air from which it was deflected by radiation and convection in the heating chamber 66. The highly heated air from the heater enters the pipe 68 and passes into the space enclosed by the jacket 24 of the en-

gine so as to impart heat to the cylinder 5, and from the jacket the air passes into the valve chamber 31. At the commencement of the down stroke, the compressed air, from which some heat has been extracted in the jacket 24, enters the cylinder 5 to force the piston thereof downwards, and after said piston has moved part way on its stroke, the valve 35 will be closed so as to cut off the air. For the completion of the operative stroke of the engine, I rely upon the expansion of the air in the cylinder due to the absorption of heat from the heated walls of the cylinder, so that when the operative stroke of the piston has been completed, the temperature of the air therein will be much reduced. On the up stroke, the cam 55 opens the exhaust valve 46, and the air from the cylinder will be forced out of the same. When a regenerator is employed, the air from the engine cylinder will be directed through the jackets 78, so that heat from the exhaust air will be extracted therefrom and absorbed by the cold air passing from the reservoir into the heater.

The cycle above described will be repeated throughout the operation of the engine. By regulating the valve 71 to adjust the flow of air through the heater, the consumption of the combustible therein can be regulated and the speed of the engine thus adjusted. When it is desired to replenish the supply of combustible material, the valves 71 and 72 are closed so as to cut off the engine and maintain the supply of air in the reservoir 75, after which the cap 64 is removed and the fresh material deposited upon the grid or grate 59. If any considerable quantity of ash accumulates in the bottom of the heater, it may be removed at this time through the cap 61. If desired, the pipe 70 may be provided with a valve corresponding to the valve 72, so that

during the operation of replenishing the supply of combustible material, both of said valves may be closed and the valve 71 allowed to remain open. In this way sufficient heat will be received from the walls of the heater 6 as to keep the engine in operation for the short time required to supply the desired combustible material.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:

1. In a combustion engine, the combination of an engine cylinder, an air compressor, and a heater for heating the compressed air prior to its admission to the engine cylinder, said heater being supplied with a solid combustible and the air being directed into actual contact with said combustible to support combustion thereof, substantially as set forth.

2. In a combustion engine, the combination of an engine cylinder, an air compressor, a heater for heating the compressed air prior to its admission to the engine cylinder, said heater being supplied with a solid combustible and the air being directed into actual contact with said combustible to support combustion thereof, and a regenerator located between the compressor and heater and connected with the engine exhaust, substantially as set forth.

3. In a combustion engine, the combination of an engine cylinder, an air compressor, and a heater for heating the compressed air prior to its admission to the engine cylinder, said heater being supplied with a solid combustible, a part of the air being directed into actual contact with the combustible to support combustion thereof and the remaining portion of the air being directed into proximity with

the combustible so as to be heated by radiation and convection, the air thus directly and indirectly heated being reunited before entering the engine cylinder, substantially as set forth.

4. In a combustion engine, the combination of an engine cylinder, an air compressor operated therefrom, and a heater for heating the compressed air prior to its admission to the engine cylinder, said heater being supplied with a solid combustible and the air being directed into actual contact with said combustible to support combustion thereof, substantially as set forth.

5. In a combustion engine, the combination of an engine cylinder, an air compressor operated therefrom, and a heater for heating the compressed air prior to its admission to the engine cylinder, said heater being supplied with a solid combustible, a part of the air being directed into actual contact with the combustible to support combustion thereof and the remaining portion of the air being directed into proximity with the combustible so as to be heated by radiation and convection, the air thus directly and indirectly heated being reunited before entering the engine cylinder, substantially as set forth.

6. In a combustion engine, the combination of an engine cylinder, a compressor operated therefrom, a receiver connected with said compressor, and a heater between the receiver and the engine cylinder, substantially as set forth.

7. In a combustion engine, the combination of an engine cylinder, a compressor operated therefrom, a receiver connected with said compressor, a heater between the receiver and the engine cylinder, and a regenerator between the receiver and heater and connected with the exhaust of the engine, substantially as set forth.

8. In a combustion engine, the combination of an

engine cylinder, a compressor operated therefrom, a receiver connected with said compressor, and a heater supplied with a burning combustible, air from the receiver being directed into actual contact with said combustible to support combustion thereof, substantially as set forth.

9. In a combustion engine, the combination of an engine cylinder, a compressor operated therefrom, means for cooling the compressor, and a heater between the compressor and the engine cylinder for heating the compressed air before its admission into the engine cylinder, substantially as set forth.

10. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater for heating air, a conduit for conducting the heated air from the heater into the heating chamber of the engine, and a conduit for conveying the air from said heating chamber into the engine cylinder, substantially as set forth.

11. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater for heating air, a conduit for conducting the heated air from the heater into the heating chamber of the engine, a conduit for conveying the air from said heating chamber into the engine cylinder, and a regenerator through which the air passes before entering said heater, said regenerator being connected with the exhaust of the engine, substantially as set forth.

12. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater supplied with a solid combustible, means for forcing air through said burning combustible to maintain combustion thereof, a conduit for conveying the heated air from the heater to the heating chamber of the engine, and a conduit

for conveying the air from said heating chamber into the engine cylinder, substantially as set forth.

4 13. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a compressor operated by the engine, a heater, a conduit connecting the compressor with the heater, a conduit connecting the heater with the heating chamber of the engine cylinder, and a conduit connecting said heating chamber with the engine cylinder, substantially as set forth.

5 14. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a compressor operated by the engine, a heater, a conduit connecting the compressor with the heater, a regenerator in said conduit connected with the engine cylinder, a conduit connecting the heater with the heating chamber of the engine cylinder, and a conduit connecting said heating chamber with the engine cylinder, substantially as set forth.

6 15. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater supplied with a solid combustible, a compressor operated by the engine cylinder, a conduit connecting the compressor with the interior of the heater, whereby air from the compressor will be directed into contact with the burning combustible to support combustion thereof, a conduit connecting the interior of the heater with the heating chamber of the engine cylinder, and a conduit connecting said heating chamber with the engine cylinder, substantially as set forth.

7 16. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater supplied with a solid combustible, a jacket surrounding said heater, a conduit for conveying air within said

jacket, a conduit for conveying air from the jacket to the heating chamber of the engine cylinder, a by-pass extending between said conduits and including the interior of the heater for conveying a portion of the air into direct contact with the burning combustible to support combustion thereof, and a conduit connecting the heating chamber of the engine cylinder with the interior of said cylinder, substantially as set forth.

AUG 12 1900
¶ 17. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater supplied with a solid combustible, a jacket surrounding said heater, a conduit for conveying air within said jacket, a conduit for conveying air from the jacket to the heating chamber of the engine cylinder, a by-pass extending between said conduits and including the interior of the heater for conveying a portion of the air into direct contact with the burning combustible to support combustion thereof, a conduit connecting the heating chamber of the engine cylinder with the interior of said cylinder, and a compressor operated by the engine cylinder for supplying air to the heater, substantially as set forth.

AUG 12 1900
¶ 18. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater supplied with a solid combustible, a jacket surrounding said heater, a conduit for conveying air within said jacket, a conduit for conveying air from the jacket to the heating chamber of the engine cylinder, a by-pass extending between said conduits and including the interior of the heater for conveying a portion of the air into direct contact with the burning combustible to support combustion thereof, a conduit connecting the heating chamber of the engine cylinder with the interior of said cylinder, a compressor operated by the engine cylinder for supplying air to the

heater, and a receiver between the compressor and said heater, substantially as set forth.

18. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a ^{independent and outside of said heating chamber} heater for heating air, a conduit connecting the heater with said heating chamber, a conduit connecting the heating chamber with the interior of the cylinder, and a valve for admitting air from the heating chamber into the engine cylinder during a part only of its operative stroke, whereby an expansion effect thereof will be secured, substantially as set forth.

20. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a ^{independent and outside of said heating chamber} heater for heating air, a conduit connecting the heater with said heating chamber, a conduit connecting the heating chamber with the interior of the cylinder, a valve for admitting air from the heating chamber into the engine cylinder during a part only of its operative stroke, whereby an expansion effect thereof will be secured, and a compressor operated by the engine for supplying air to the heater, substantially as set forth.

22. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a ^{independent and outside of said heating chamber} heater for heating air, a conduit connecting the heater with said heating chamber, a conduit connecting the heating chamber with the interior of the cylinder, a valve for admitting air from the heating chamber into the engine cylinder during a part only of its operative stroke, whereby an expansion effect thereof will be secured, a compressor operated by the engine for supplying air to the heater, and a receiver between the compressor and the heater, substantially as set forth.

42. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater supplied with a solid burning combustible, means for directing air through the heater into direct contact with said combustible to support combustion thereof, a conduit connecting the interior of the heater to said heating chamber, a conduit connecting the heating chamber with the interior of the cylinder, and a valve adapted to admit the air from said heating chamber into the interior of the cylinder during a part only of the operative stroke of the engine, whereby an expanding effect will be secured, substantially as set forth.

52. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater supplied with a solid burning combustible, means for directing air through the heater into direct contact with said combustible to support combustion thereof, a conduit connecting the interior of the heater to said heating chamber, a conduit connecting the heating chamber with the interior of the cylinder, a valve adapted to admit the air from said heating chamber into the interior of the cylinder during a part only of the operative stroke of the engine, whereby an expanding effect will be secured, and a compressor operated by the engine for forcing air through said heater, substantially as set forth.

62. In a combustion engine, the combination of an engine cylinder, a heating chamber surrounding the same, a heater supplied with a solid burning combustible, means for directing air through the heater into direct contact with said combustible to support combustion thereof, a conduit connecting the interior of the heater to said heating chamber, a conduit connecting the heating chamber with the in-

terior of the cylinder, a valve adapted to admit the air from said heating chamber into the interior of the cylinder during a part only of the operative stroke of the engine, whereby an expanding effect will be secured, a compressor operated by the engine for forcing air through said heater, and a receiver between the compressor and said heater, substantially as set forth.

10
17²⁵. In a combustion engine, the combination of an engine cylinder, a heater, a jacket surrounding the heater, a conduit leading into said jacket, means for forcing air through said conduit, a conduit leading from the jacket to the engine cylinder, a by-pass connecting the first of said conduits with the second of said conduits and extending through the heater, and a valve in the first of said conduits for causing a drop in pressure of the air, whereby a portion of the air will be directed through the heater, substantially as set forth.

10
18²⁶. In a combustion engine, the combination of an engine cylinder, a heater, a jacket surrounding the heater, a conduit leading into said jacket, means for forcing air through said conduit, a conduit leading from the jacket to the engine cylinder, a by-pass connecting the first of said conduits with the second of said conduits and extending through the heater, a valve in the first of said conduits for causing a drop in pressure of the air, whereby a portion of the air will be directed through the heater, and a source of burning combustible in the heater, into direct engagement with which a portion of the air will be directed, substantially as set forth.

10
19²⁷. In a combustion engine, the combination of an engine cylinder, a heater, a jacket surrounding the heater, a conduit leading into said jacket, means for forcing air

1

through said conduit, a conduit leading from the jacket to the engine cylinder, a by-pass connecting the first of said conduits with the second of said conduits and extending through the heater, a valve in the first of said conduits for causing a drop in pressure of the air, whereby a portion of the air will be directed through the heater, and a compressor operated by the engine cylinder for forcing air into the first of said conduits, substantially as set forth.

10 28. In a combustion engine, the combination of an engine cylinder, means for supplying hot air to the same, an inlet port therefor, a valve chest over the inlet port, two entrance ports into the valve chest, and a valve located between the entrance ports and normally closing the inlet port of the cylinder, whereby the valve will be maintained in balance, substantially as set forth.

29. In a combustion engine, the combination of an engine cylinder, a shaft driven therefrom, a compressor driven from said shaft, and a heater between the compressor and engine cylinder, substantially as set forth.

30. In a combustion engine, the combination of an engine cylinder, a shaft driven therefrom, a compressor driven from said shaft, a heater between the compressor and engine cylinder, and a regenerator between the compressor and heater and connected to the exhaust of the engine cylinder, substantially as set forth.

31. In a combustion engine, the combination of an engine cylinder, a shaft driven therefrom, a compressor driven from said shaft, a receiver connected with said compressor, and a heater between said receiver and engine cylinder, substantially as set forth.

32. In a combustion engine, the combination of an engine cylinder, a shaft driven therefrom, a compressor

driven from said shaft, a receiver connected with said compressor, a heater between said receiver and engine cylinder, and a regenerator between the receiver and heater and connected to the exhaust of the engine, substantially as set forth.

33. A hot air or combustion engine, provided with wheel or roller bearings on its moving parts, substantially as set forth.

10#34. A hot air or combustion engine, having an air-packed piston and provided with wheel or roller bearings on its moving parts, substantially as set forth.

35. A hot air or combustion engine, having wheel or roller bearings on its cross-head, connecting rod and shaft, substantially as set forth.

11#36. A hot air or combustion engine, provided with an air-packed piston, an air-packed controlling valve, and wheel or roller bearings on its moving parts, substantially as set forth.

37. In a combustion engine, the combination of an engine cylinder, means for supplying hot air thereto, a cross-head operated by the piston of said cylinder, and roller bearings carried by said cross-head, substantially as set forth.

38. In a combustion engine, the combination of an engine cylinder, means for supplying hot air thereto, a cross-head operated by the piston of said cylinder, roller bearings carried by said cross-head, a compressor operated from the engine cylinder, roller bearings carried by the cross-head of said compressor, and a heater between the compressor and said engine cylinder, substantially as set forth.

4-30 -2 1900

39. In a combustion engine, the combination of an engine cylinder, means for supplying hot air thereto, a cross-head connected with the piston of said cylinder, roller bearings for said cross-head, a main shaft, a crank on said shaft, a connecting rod between said cross-head and crank, and roller bearings between said connecting rod and crank, substantially as set forth.

4-30 -2 1900

40. In a hot air engine, the combination of an engine cylinder, means for supplying hot air thereto, a cross-head connected with the piston of said cylinder, roller bearings for said cross-head, a main shaft, a crank on said shaft, a connecting rod between said cross-head and crank, roller bearings between said connecting rod and crank, and roller bearings for said shaft, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 5th DAY OF July 1899.

THOMAS A. EDISON.

Witnesses:

Thomas A. Edison

1. FRANK L. DYER

2. J. F. RANDOLPH.

Oath.

State of New Jersey
County of Essex.

} ss.:

THOMAS A. EDISON, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States, and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;

THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN COMBUSTION ENGINES

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

Thomas A. Edison
THOMAS A. EDISON.

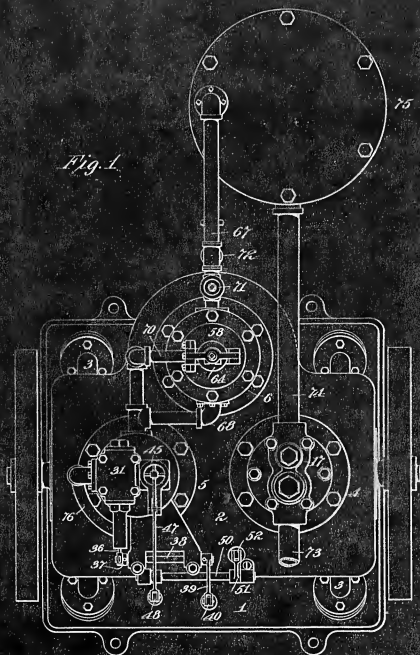
SWORN TO AND SUBSCRIBED BEFORE ME THIS 5th DAY OF July 1899

(SEAL)

J. F. Randolph

NOTARY PUBLIC FOR
New Jersey.

Fig. 1.



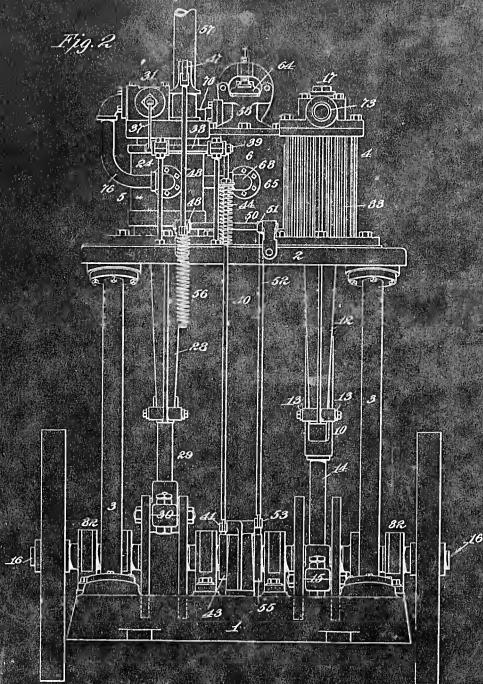
Witnesses:

James Coleman
John R. Taylor

Inventor

Thomas A. Edison
By Alfred C. Brown
 Att'ys.

Fig. 2



Witnesses:

John A. Edman

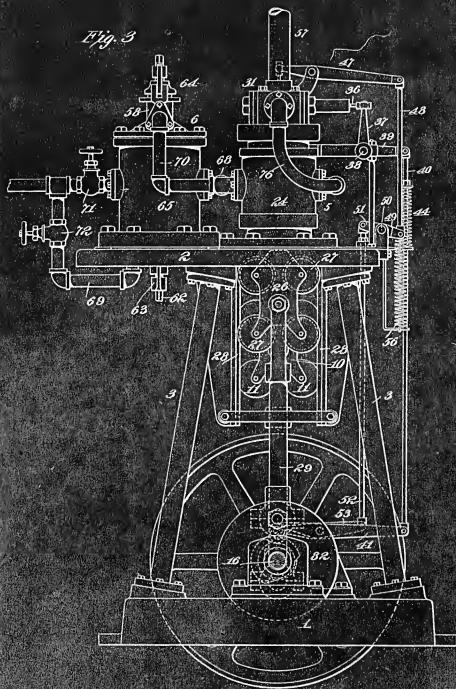
John A. Edman

Inventor

John A. Edman

By John A. Edman

Att'y.

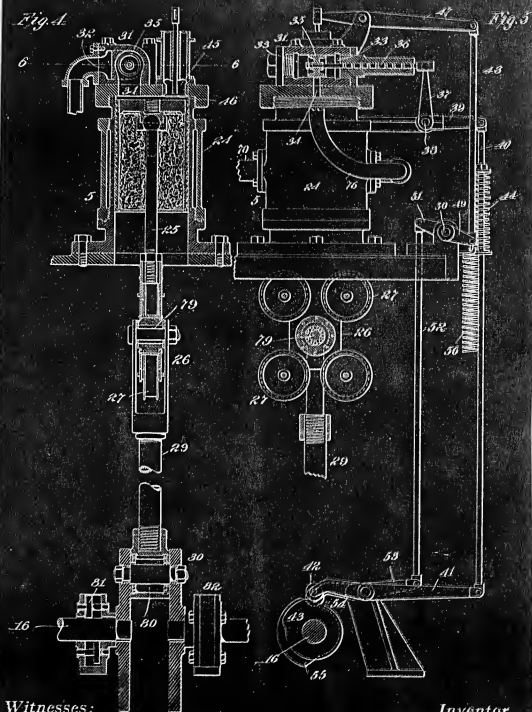


Witnesses:

Geo. F. Coleman
John A. Taylor

Inventor

Thomas A. Edison
by John Edmonds, Atty.
 Att'ys.



Witnesses:

John A. Coleman
John A. Taylor

Inventor

Thomas A. Coleman
by Alfred Edwards, atty.
 1879.

Fig. 6

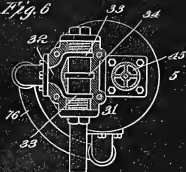


Fig. 7

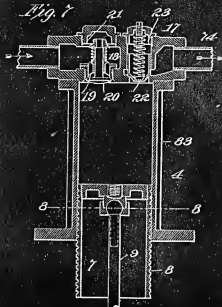
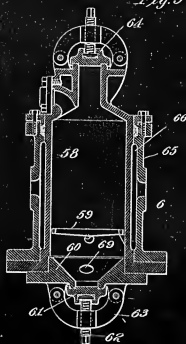


Fig. 8



Fig. 9



Witnesses:

Jos. E. Egan

Jno. A. Taylor

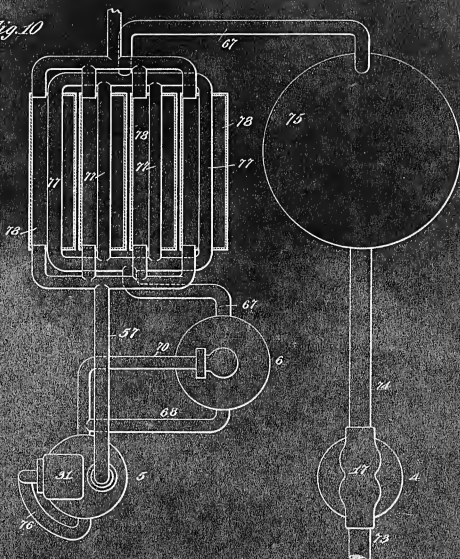
Inventor

Thomas A. Egan

By Apes Edmonds & Co.

Att'ys.

Fig. 10



Witnesses:

Jas. C. Colman
Jno. A. Charles

Inventor

James A. Colman
By J. W. Leonard, Atty.

2-020.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,

United States Patent Office

Washington, D. C., July 18, 1899.

Sir:

I have to acknowledge the receipt of the petition, specification, oath, and
drawing of your alleged improvement in

Combustion Engine.

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up
for examination in its order

You will be duly advised of the examination.

Very respectfully,

Case will be taken up for
examination in about six weeks.

C. A. Driell
Commissioner of Patents.

J. A. Edison.

J. J. Edwards & J. J. Edwards
31 Nassau St., N. Y. City.

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification,
oath, and drawings (where the nature of the case admits of drawing) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are
furnished in due form by the inventor or applicant.



Any communication respecting this application should give the serial number, date of filing, and title of invention.

167—If payment in made by check or draft, the credit granted is subject to the collection of the same.

*Call's Address
"Edison, New York."*

*From the Laboratory
of
Thomas A. Edison.*

PHONOGRAPH DICTATION.

Orange, N.J. July 19, 1899

Messrs. Dyer, Edmonds & Dyer,
31 Nassau Street,
New York.



Dear Sirs:

In reply to your favor of the 15th inst., I beg to en-
close you herewith the blue prints and drawings mentioned in your
letter.

Yours truly,
J. B. Randolph



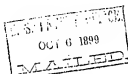
Room No. 35.....
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All our intentions respecting this M.
application, and give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., Oct. 6, 1899.

Thomas A. Edison,
C/o Dyer, Edmonds & Dyer,
#31 Nassau st.,
N. Y. City.



Please find below a communication from the EXAMINER in charge of your application.

Combustion Engines, Filed July 18, 1899, Serial #724,246.

C. H. Duell
Commissioner of Patents.

The pivotal supports for levers 41 and 53, shown in figure 5, should be lettered and described.

On page 1, lines 5- 6, the words "case No. 1010" should be canceled.

The description from line 19 of page 1 to line 13 of page 2 is indistinct. It is understood that the heat imparted to the compressed air would add to the total energy, but it is not clearly brought out how such addition of heat would result "in a very great increase of the efficiency thereof".

The description of the packing grooves as "concentric grooves" is objected to as incorrect; the several grooves do not have a common center.

The description on page 4, lines 10 - 15, is indistinct.

If the description on page 5, lines 24- 28, is meant to state that

Rule 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the emendation or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper.

Case No. 724,246. Page No. 1

#724,246.

-2-

a solid combustible contains less volatile hydrocarbons than a fluid combustible, it should be amended to clearly so state; at present, its meaning is not clear.

The several statements throughout the description that the valve 71 is for the purpose of causing a drop in the pressure between pipe 67 and pipe 68 are objected to as indistinct.

The matter contained on page 8, lines 16 - 18, is wholly in the nature of advertisement of applicant's apparatus, and should therefore be canceled.

The description on page 10, lines 7 - 13, is indistinct and partly incorrect. Since the walls of the cylinder can be no hotter than the air which has imparted heat thereto, they cannot impart heat to said air until the temperature of the air has been lowered by expansion. The initial expansion of the air is due to the heat contained in it, but, of course, after the air has cooled down in expanding a small amount of heat would be absorbed from the cylinder walls.

In the several claims which cover the engine cylinder, air compressor, heater, or receiver, the connections between these elements should be directly included.

The words "said heater being supplied with a solid combustible" occurring in the claims, is not a proper patentable limitation, and should be canceled.

The words "air being directed", occurring in many of the claims, are objected to as indistinct and functional; the means for "directing" the air in the manner referred to should be directly included in such claims.

Claim 11 is indistinct and functional in the words, "a regenerator

Case No. 2 Page No. 1

#724,246.

-3-

through which the air passes before entering said heater".

Claims 19, 20, 21 are indistinct and functional in the words "a valve for admitting air...into the engine cylinder during a part only of its operative stroke"; the construction and arrangement by which the valve is enabled to perform its function should be specified in the claims.

Claims 22, 23, 24, are indistinct and functional in the words "a valve adapted to admit air...during a part only of the operative stroke of the engine".

Claims 25, 26, 27 are indistinct in the words "a valve...for causing a drop in the pressure of the air, whereby a portion of the air will be directed through the heater".

Claims 29, 30, 31, 32 are functional in the words "a shaft driven therefrom", "a compressor driven from said shaft"; the connections for driving the shaft and compressor should be directly included in the claims.

Claims 34, 36 are indistinct in the words "air packed piston".

Claim 36 is further indistinct in the words "air packed controlling valve".

Claims 1, 4, and 29 are rejected on: -

✓ # 10,081, Oct. 4, 1853; Woodbury et.al.;

✓ # 33,799, Nov. 26, 1861, Shaw;

✓ #120,325, Oct. 24, 1871, Rider;

✓ #224,772, Feb. 24, 1880, Fell;

✓ #248,698, Oct. 25, 1881, Anderson;

(Air and gas Engines, Caloric).

Case No. 2 Paper No. 1

724,246.

-4-

Claims 2, 6, 7, 8, 30 and 32 are rejected on Woodbury, Shaw, and Fell, cited.

Claims 3, 5, 25, 26 and 27 are rejected on Shaw, Fell, Rider, and Anderson, cited.

Claim 9 is rejected on the references cited against claim 1, taken with: -

✓ #324,060, Aug. 11, 1885, Woodbury et.al.;

tx #538,068, April 23, 1895, Penney;

(Air and Gas Engines, Caloric).

There would be no invention in providing the compressors of the first group of references with cooling means; such an arrangement being common, as shown, by Woodbury (324,060) and Penney, cited.

Claim 9 is further rejected on: -

✓ #569,672, Oct. 20, 1896, Von Querfurth;

(Air and Gas Engines, Caloric).

Claims 10, 13, 19, 20, and 21 are rejected on Von Querfurth, cited, and on: -

✓ #373,820, Nov. 29, 1887, Eckerson;

(Air and Gas Engines, Caloric).

Claims 11 and 14 are rejected on the references cited against claim 10, taken with Woodbury (10,081), Shaw, and Fell, cited.

Claims 12, 15, 22, 23 and 24 are rejected on Von Querfurth, cited.

Claims 16 and 17 are rejected on Anderson, Rider, Shaw, and Fell, cited. There would be no invention in providing the cylinders of the references with heating jackets; such a construction being common, as shown, for example, by Eckerson and Von Querfurth, of record.

#724,246.

-5-

Claim 18 is rejected on Shaw, Fell, and Von Querfurth, cited.

Claim 28 is rejected on Eckerson, and Von Querfurth, cited, and on:

✓ #429,282, June 3, 1890, McTighe

(Air and Gas Engines, Caloric).

Claim 31 is rejected on Woodbury (10,081) Von Querfurth, Eckerson, Fell, and Shaw, cited.

Claims 33, 35, 37, 38, 39, and 40 are rejected on the references cited. It does not constitute invention to provide the moving parts of any apparatus with roller bearings for the purpose of reducing friction.

Claims 34 and 36 are rejected on : -

✓ #232,158, Sept. 14, 1880, Waterhouse et al.,

(Air and Gas Engines, Caloric).

As to claim 36, there would be no invention in substituting the common form of packing grooves for the valve-stem packing in Waterhouse engine.

G.A.

THOMAS A. EDISON :
COMBUSTION ENGINES :
FILED JULY 18, 1899 : ROOM NO. 35.
SERIAL NO. 724,246 :

HONORABLE COMMISSIONER OF PATENTS,

S I R :-

Please amend as follows:

Page 4, line 26, after "16" insert ----- The pivot of the lever 41 is carried by a suitable supporting bracket 41' -----

The Official draftsman will please mark the bracket which supports the pivot of the lever 41 with the reference numeral 41', and charge the same to our account.

Page 5, line 8, after "43" insert ----- The pivot of the lever 43 is carried by the support 41' -----

We note that the Examiner objects to the words "case No. 1010" on page 1 of the specification. We call his attention to the fact that all of applicant's applications are identified by applicant's own case number, and that no objection whatever to this practice has been raised.

By the matter on pages 1 and 2 which the Examiner does not understand, we mean that the imparting of heat to the compressed air permits the latter to operate an engine, which in turn operates the compressor with surplus energy for accomplishing work.

Page 4, line 11, erase the word "concentric".

The matter on page 4 which the Examiner does not understand, means that since the engine and compressor are both single-acting, the cranks should be so disposed that the compressor piston will move on its compression stroke as the engine piston moves on its down or expansion stroke.

Page 5, line 26; erase "deposit" and substitute ----

volatile hydrocarbons ----

We do not see why the Examiner objects to the statements in the description that the valve 71 is employed for the purpose of causing a drop in the pressure between the pipe 67 and the outlet pipe 68. This is the true function of the valve in question. If the valve were not used, hardly any air would be deflected through the heater, since the passage around the jacket would be of very much less resistance. By employing the valve 71, a choking effect is secured, whereby there will be a drop in the pressure beyond the valve in just the same way as when a pressure-reducing valve is employed.

If the matter on page 8 to which the Examiner objects is incorrect, we will erase it; if it is correct, we see no objection to it. So far as applicant knows, he is the first person to employ wheel or roller bearings in engines of this type; so that we think there is ample basis for the statement in question.

As we understand it, the statement of the Examiner criticising the matter on page 10, conveys exactly the meaning which we wish to convey by the matter in question. The walls of the cylinder are heated by the heated air surrounding them, and excluding losses by radiation etc., the temperature of the cylinder walls would normally equal the temperature of the surrounding heated air. As the air in the cylinder expands and its temperature is reduced, it absorbs heat from the cylinder walls, and hence performs an added increment of work.

We note that the Examiner objects to the words "said heater being supplied with a solid combustible", occurring in the claims. In applicant's former application Serial No. 706,976 referred to in the introductory portion of the specification, the claims were appealed to the Examiners in

Chief and were expressly limited to the solid combustible material. After the appeal in the application in question was decided, a divisional application was filed on the apparatus, and the present Examiner requested us to furnish an additional view actually showing the solid combustible. We believe therefore that this objection should be withdrawn.

Erase claims 1 to 18 inclusive, 29 to 33 inclusive, 35, and 37 to 40 inclusive, and change the numerals of the remaining claims to 1 to 12 inclusive.

We note that the Examiner rejects present claims 1 to 6 inclusive (former 19 to 24) on the patent to Von Querfurth and the patent to Ekersen. All of these claims are limited to the operation of the admission valve in such a way as to produce an expansion effect. We do not find any similar description in either of the references. Furthermore, present claims 3 and 6 are specifically limited in the combination to a receiver between the compressor and engine cylinder. Neither of the references show this feature of the combination. Furthermore, the fourth, fifth and sixth claims are limited to the employment of a heater of the type burning a solid combustible, into direct contact with which the air is admitted. Neither of the references is of this character.

The 7th, 8th and 9th claims are all limited specifically to the employment of the valve in the conduit leading into the jacket of the heater, by which a drop in pressure will be secured beyond the jacket to effect a revoluble flow of air through the solid combustible irrespective of the resistance thereto. This seems to be an entirely new feature in the combination. In the Anderson patent, air is admitted to a jacket around the heater, and from the jacket it divides, part going beneath the grate and part above the grate. The opening above the grate is never closed, while

the opening below the grate can be regulated. The Examiner will therefore see that if for any reason the grate became obstructed, all the air would tend to flow above it. With applicant's suggestion, by interposing a valve in the pipe leading to the jacket, the jacket can be almost entirely cut off, so as to cause the entire pressure to pass through the grate. In the Rider patent, all the air from the compressor passes through the grate, and the only valve which is used merely regulates the single stream of air. In the Fell patent all of the air passes into the heating chamber, and a single valve is employed for regulating the flow into the same. In the Shaw patent a shunt is provided around the grate through which air can be deflected, a damper being employed in the heating chamber to cut off the products of combustion therefrom. Although this damper does to a certain extent regulate the flow of air through the grate, it is not located as claimed, and does not provide for a drop in pressure as explained. By employing a regulating valve in the conduit leading to the heater, as covered in the claims, a perfect regulation is secured, while the valve is not subjected to the intense heat of the heating chamber, as is the case with the damper of the Shaw patent.

We note that the Examiner rejects the 10th claim (former 28th) upon the patents to Ekerson and Von Querfurth in connection with the patent to McTighe. The latter reference, we submit, does not show the special construction of admission valve which is made the subject of the claim. The claim in question calls for a valve chest having two entrance ports and an outlet leading into the cylinder, with a valve normally closing the outlet and located between the two entrance ports so as to be maintained in a balanced condition. We do not find the equivalent of this construction in the McTighe patent, and if the Examiner insists upon this refer-

ence, we request that its pertinence be indicated under the rules.

Regarding claims 11 and 12 (former 34 and 36), against which the patent to Waterhouse et al has been cited, we respectfully request reconsideration thereof. So far as applicant knows, he is the first to employ antifriction bearings in a combustion engine. We submit that when in addition to this suggestion the further suggestion of employing airtight pistons and valves is made to produce a device wherein friction is reduced to a minimum, a sufficient basis for an allowable claim is laid.

Very respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, August 2, 1900.

2-246.

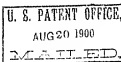
Room No. 31,
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., Aug. 20, 1900.

Thos. A. Edison,
C/o Dyer, Edmonds & Dyer,
#31 Nassau st.,
N. Y. City.



Please find below a communication from the EXAMINER in charge of your application.



Combustion Engines, filed July 10, 1899, Serial #724,246.

C. H. Duell
Commissioner of Patents.

The criticism urged against the description on page 10 in the last Office letter is still adhered to. It would seem that the air contains so much heat which may be imparted to the engine either in heating the walls of the cylinder or in doing work directly in the cylinder and it is immaterial whether or not the heat is first given out to the cylinder walls and the remaining heat utilized in doing work, or whether all the heat is utilized in doing work.

Claims 1, 2 and 3 are rejected upon the references of record. The valve set forth in these claims for cutting off the supply of air before the end of the stroke is common in all steam engines.

Claims 4, 5 and 6 are rejected being aggregations since it is thought that the peculiar kind of heater bears no relation to the engine system.

Case No. 2 Paper No. 2

RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the erasure or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper.

In every application for a patent filed subsequent to December 31, 1897, responsive action must be made by the Commissioner of Patents within one year after the last office action or the case will become abandoned.

#724,246.

M.

Claims 7, 8 and 9 are rejected upon the references of record.

Claim 10 is for a valve gear construction while the remaining claims are for a caloric engine. These are separate and distinct inventions and should be the subject matter of separate applications. For this reason no further action will be taken until claim 10 is divided out of this case.

Claims 11 and 12 are rejected being an aggregation between the peculiar kind of piston and a peculiar kind of bearing and further the same does not amount to invention in view of roller bearings used in analogous connections in: -

Diamond, #473,829, April 6, 1892; ✓

(Bicycles, Forks, Spring).

W.A.H.

Case No. 3 Paper No. 3

THOMAS A. EDISON :
COMBUSTION ENGINE :
FILED JULY 18, 1899 : ROOM NO. 35.
SERIAL NO. 724,246 :

HONORABLE COMMISSIONER OF PATENTS,

S I R :—

We note that the Examiner still criticizes the description on page 10, but as we understand his criticism it only questions the expediency of applicant's construction and not its operativeness. Since the air in the jacket 24 is of the maximum temperature, and since the air expanded in the cylinder is of reduced temperature, it seems inevitable that there will be a conduction of heat through the cylinder walls, producing an increased expansive effect in the expanding air. Such an operation we believe would take place, but as to its relative efficiency, no opinion is expressed.

We note that the Examiner still rejects claims 1 to 9 inclusive on the references of record. We have examined the references and have compared them carefully with the rejected claims. After making such comparison we are still of the opinion that the claims should be allowed, and therefore ask that they may be reconsidered.

So far as claim 10 is concerned, we take issue with the Examiner in his ruling that the claim covers only "a valve gear construction". In drawing the claim we took pains to include in the combination the necessary operative parts with which the valve cooperates for the production of a complete combustion engine. Reconsideration of the Examiner's ruling on this claim is therefore requested.

We note that the Examiner now rejects the 11th and 12th claims on the ground of aggregation. We call his attention, however, to the fact that by the adoption of the double expedient of air packing the piston and valves and using roller bearings on the moving parts, the element of friction is very greatly reduced and an engine obtained of materially increased efficiency. The citation by the Examiner of the patent to Diamond does not strike us as being pertinent, since the reference is entirely outside of the art with which applicant is dealing.

Should the Examiner adhere to his rejection of the 10th claim, it is asked that such action thereon be taken as will permit the question of division to be brought to the attention of the Commissioner on petition. Should he still reject the remaining claims, it is asked that such action be taken as will permit an appeal.

Very respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, August 6, 1901.

2-246.

Room No. 89.

All communications should be addressed to
The Commissioner of Patents,
Washington, D. C.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,

UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., September 16, 1901.

T. A. Edison,
C/o Dyor, Edmonds & Dyer,
Edison Laboratory,
Orange, N. J.



Please find below a communication from the EXAMINER in charge of your application.

Serial No. 724,246; filed July 18, 1899; "Combustion Engine".

R. I. Allen
Commissioner of Patents.

This case, as amended August 9th, has been considered.

It is still thought that claim 10 covers subject-matter independent of that covered by the other claims. The previous office action as to division is therefore repeated. It is noted, however, that the said claim is apparently anticipated by the patent to Millholland, 92,630, July 13, 1869, (Steam Valves, Piston valves).

Applicant's post office address should be stated in the petition.

In line 15, page 3, "with" should read to.

The reference numeral 41 should be placed upon fig. 5.

The laudatory passage contained in lines 16 to 28, page 8, is unnecessary to a full presentation of the alleged invention,

Case No. 7 Paper No. 1

NOTE 73. In every amendment the exact word or words to be deleted or inserted in the application must be specified and the precise point indicated where the change or insertion is to be made. All such amendments must be on sheets of paper separate from the paper previously filed, and written on but one side of the paper.

Edison-724,246-2-

and should therefore be erased.

The state of the art is farther shown by the patent to
Gale, 17,855, July 2, 1857, (Steam Engines, Pistons).

*Richard A. Dyer
Samuel Edmunds
Frank L. Dyer*

*Law Office
of
Dyer, Edmunds & Dyer,
Specialty: Patents, & Patent Causes.
31 Nassau Street,
New York.*

*Cable Address
"Dyer, Edmunds & Dyer"
Pl. No. 3910 Ent.*

THOMAS A. EDISON
SUBJECT-MATTER:
FILED
SERIAL NO.
EXAMINER'S ROOM NO.

*Combustion Engine
July 18, 1889
724 246
35*

Feb. 14/1892

HONORABLE COMMISSIONER OF PATENTS,

S I R : _____

In the above entitled application, please address further communications to us at our office, No. 31 Nassau Street, New York City.

Very respectfully,

Dyer, Edmunds & Dyer
Attorneys of Record.

THOMAS A. EDISON
COMBUSTION ENGINES
FILED JULY 18, 1899
SERIAL NO. 724,246
ROOM NO. 89

HONORABLE COMMISSIONER OF PATENTS,

S I R :—

The Official draftsman will please copy the reference numeral 41' at the bottom of figure 5 to the bracket on which the lever 41 is pivoted, charging the cost of the same to our account.

Very respectfully,

Attorneys for Edison.

New York, August 15, 1902.

Case No. 7 Paper No. 6

THOMAS A. EDISON
COMBUSTION ENGINES
FILED JULY 18, 1899
SERIAL NO. 724,246
ROOM NO. 89

HONORABLE COMMISSIONER OF PATENTS,

S I R :—

In a separate communication sent herewith, we have requested the Official draftsman to apply the reference numeral 41' at the bottom of figure 5 to the bracket on which the lever 41 is pivoted.

Page 3 line 15 erase "with" and substitute ---to---
Cancel claim 10.

We are not able to locate the "laudatory passage" to which the Examiner refers, as the matter contained between lines 16 and 28 on page 8 seems to be quite unobjectionable. If the Examiner will identify the matter in point, we will be glad to erase it if, as he says, it is unnecessary to a full presentation of the alleged invention.

Very respectfully,

THOMAS A. EDISON,

By _____

Attorneys.

New York, August 15, 1902.

Case No. 7 Paper No. 6

Room No. 218.
All communications should be addressed to
"The Commissioner of Patents,"
Washington, D. C."

2-260.
M. _____ Rej. Paper No. 11.
All communications respecting this
application should give the serial number,
date of filing, and title of invention.

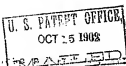
DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

Thos. A. Edison,
WASHINGTON, D. C., Oct. 15, 1902.

C/o Dyer, Kimmons & Dyer,

251 Nassau St.,

New York City.



Please find below a communication from the EXAMINER in charge of your application.

Combustion Engines filed July 18, 1899, Serial #724,246.

G. J. Allen
Commissioner of Patents.

This case, as amended Aug. 16, 1902, has been considered.

Beginning line 19, page 1, and ending line 13, page 2, cancel all matter as being inconsistent with the state of the art as a statement of invention.

The corrections of the formal errors noted in the prior letters with which compliance has not been made, must be made before the case issues.

Claims 1, 2, and 3 are rejected on Von Querfurth, of record, in view of the common use of cut off slide valves.

Claims 4, 5, and 6 are rejected as aggregations for the reasons before stated and on Shaw, of record.

Claims 7, 8, and 9 are rejected on the references of record, particularly Shaw.

Claims 10 and 11 are still held to be improper combinations for the reasons previously given and are rejected on the references of record, particularly Waterhouse et al., in view of Eisenhuth.

M.H.C.

Case No. 3 Paper No. 7

2-276.

LETTER No. 141046

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C.

Mr. F. L. Dyer,
Orange,

Aug 15th, 1903

SIR:

This office is in receipt of your order of Aug 12th for copies of
patents 92,630 et al

In reply you are advised that copies of all the patents ordered, that are
in print, have been mailed this day, except those enumerated below, the
supply of which is exhausted. As the appropriation is insufficient to reprint
all exhausted copies, special reasons must be given before the reproduction of
any patent will be ordered.

The balance of your remittance, \$_____, will be returned by regis-
tered mail.

By direction of the Commissioner.

Respectfully,

C. M. Inghen
Chief Clerk.

The copies exhausted are:

473,829
538,168. Atmney

UNITED STATES PATENT OFFICE.

Thomas A. Edison, :
Combustion Engines, : Room No. 218.
Filed July 18, 1899, :
Serial No. 724,246. :
:

Hon. COMMISSIONER OF PATENTS,

Sir:-

I amend the above entitled application as follows:

Page 1, line 10, beginning with "In" erase through the word "work", line 13, page 2. Claims 1, 2 and 3 (originally 19, 20 and 21), line 3 of each, after the word "air" insert "independent, and outside, of said heating chamber". Erase claims 10 and 11. Reconsideration of the claims as now presented is respectfully requested.

The patent to VanQuerfurth relates to an engine of a totally different type from that invented by applicant in as much as the air is heated by the combustion of oil, and the heated air is then intermixed with steam before entering the working cylinder. With this reference the heater comprises practically an oil burner, and this heater is located in a jacket or casing surrounding the cylinder. With applicant's invention the heater is an independent element, quite outside of the engine jacket, and communicates with the latter by a separate conduit which is made a positive element in the first three claims.

So far as claims 4 to 9 are concerned, it is respectfully submitted that they are not adequately met by the patent to Shaw, on which they are principally rejected. Shaw does not employ the jacket surrounding the working cylinder, he does not secure an expansive effect, and his

Case No. Paper No. 2

heater differs in details from that covered by the claims in question. These claims relate to applicant's specific apparatus, and cover no more than the special advance in the art which applicant has made. If the ^{Examiner} applicant is disposed to adhere to his former actions, it is hoped that the number of references cited may be curtailed as much as possible in order to facilitate the presentation of the case before the Examiner's in Chief. So little time is allowed at the arguments before that tribunal that it is a hardship to have to review a large number of references, some of which may be more pertinent than others. Of the references cited it is thought that the examiner can very properly limit them to two or three without receding in any way from his position.

Very respectfully,

Thomas A. Edison,

By

His Attorney.

Orange, N. J.,

August 25, 1903.

Case No. 3 Paper No. 9

2-260.

Room No. 382.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

Paper No. 14.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.

Oct. 13, 1903.

T. A. Edison,

Care Frank L. Dyer,
Edison Laboratory,
Orange,
New Jersey,



Please find below a communication from the EXAMINER in charge of your application,
Combustion Engines; Filed July 19, 1899; No. 724,246.

F. J. Allen
Commissioner of Patents.

This case as amended Aug. 27, 1903, has been considered.
Attention is called to the formal errors, noted in the prior official
letters.

The amendment of claims 1, 2, and 3 is not material and said claims
are rejected on the references of record cited ^{there} against.

Claims 4, 5 and 6 are rejected on the references of record.

Claims 7, 8 and 9 are rejected on Shaw.

Applicant may consider this a final rejection if he so chooses.

The principal references are Shaw, VonGerfurth, and Fall.

M.H.C.

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 424.
SAMUEL O. EDMONDS,
REGISTRATION NO. 42.
FRANK L. DYER,
REGISTRATION NO. 426.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT IN THE ART OF BRICKING PULVERIZED MATERIALS

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN THE ART OF BRICKING PULVERIZED MATERIALS (Case 1012), of which the following is a full, clear and exact description:

My invention relates to the art of bricking pulverized material, and particularly to the bricking of pulverized ore and coal, but the improvement may be carried out with any other finely divided substance which it is desired to form into compact, solid bricks or briquettes.

^x In my patent No. 465,251, dated December 15, 1891, I described a soluble rosin soap, such as resinate of soda, as a binding material for finely pulverized ore, and such a binder, owing to its high cohesiveness, is especially applicable for the purpose. The objection to the use of a rosin soap such as resinate of soda in this art, is its solubility and it therefore was necessary, when such a binder alone was used, to observe special care, in the storage and transportation of the bricked material, in excluding water therefrom.

My present improvement is designed to overcome this objection, and by its means I am enabled to use a soluble rosin soap as a binder in the bricking of the finely pulverized material, and to obtain resulting bricks, briquettes lumps or other aggregates which shall be entirely waterproof and therefore stable in the presence of moisture. ^x My invention resides in the discovery that when a heavy hydrocarbon or other non-water soluble and non-acid material of high boiling point is added to a very viscid solution of a

rosin soap such as resinate of soda, an emulsion is formed, which may be added to the pulverized material, and that when the mixture in the form of bricks, briquettes, lumps or other aggregates is baked to drive off the water, the soluble rosin soap in hardening will bind all the particles firmly together, while the non-water soluble and non-acid material in the binder will simultaneously form a thin film over practically all the particles of material so as to make the resulting product entirely waterproof. By thus employing a soluble rosin soap as a binder for pulverized material, wherein the mixture is purely mechanical and without any chemical action taking place between the binder and the material, I am enabled to carry on my present improvement in connection with any material in pulverized form, to use a relatively small proportion of binding substance, and to effect the baking at relatively low temperatures, whereby the danger of overheating in the cars or place of storage is overcome, while by making use of a heavy hydrocarbon or other non-water soluble and non-acid material of high boiling point in the binder, I secure a product which will be entirely unaffected by water, and which can therefore be transported in open cars or stored in exposed piles.

In carrying out my present improvement for the bricking of iron ore, for example, I prefer to proceed substantially as follows: A rosin soap, preferably resinate of soda, is first secured, which may be of the proportions described in my said patent, to wit, of 1 part of soda and of about 12 parts of common rosin. This rosin soap is dissolved in water in a sufficient amount to impart a thick, molasseslike consisteney. To the solution so obtained is added preferably a thick hydrocarbon, such as the residuum obtained from the distillation and manipulation of crude petroleum, and having a very high boiling point so as not to

be volatilized during the process of baking. The proportion of the residuum so added depends largely upon the character of the binder desired and upon its own characteristics, but ordinarily good results will be secured by the addition of about 20% by weight of the rosin soap employed. The residuum is thoroughly mixed with the rosin soap solution to form an emulsion, which, owing to the heavy consistency of the hydrocarbon residuum, will be sufficiently permanent for the subsequent operations. A sufficient quantity of the emulsified binding substance so secured is intimately mixed with the ore in a suitable mixing machine, with or without the presence of slight heat, and the mixture is then formed under great pressure into bricks or briquettes in a suitable bricking apparatus. The bricks or briquettes so produced are then baked in an oven at a temperature of preferably between 400 and 600 degrees Fahrenheit until the proper result is secured. The first action of the heat in the baking oven is to drive off the free water, during which operation the resinate of soda or other rosin soap will become very hard and will bind the particles of the ore together. After the water has been driven off and the rosin soap solidified, the residuum or other hydrocarbon employed will, under the presence of the heat, spread over each particle to form a waterproofing film thereon, and in this way the resulting product will be entirely unaffected by the presence of moisture. It is therefore necessary that the baking of the bricks or briquettes should proceed to the point where the free water will be entirely expelled, and where the hydrocarbon or other non-water soluble material employed has had an opportunity to flow over the particles as explained. If the baking is discontinued before the water is driven off, the hydrocarbon or other non-water soluble material will not flow over the particles, and the

resulting waterproofing thereof will not be secured; while if such material were not used, the resulting product would be entirely unstable in the presence of considerable moisture. When lighter pulverized materials than iron ore are to be bricked, the quantity of the resinate or other rosin soap requires to be augmented, owing to the increase in the bulk of the material.

Instead of making an emulsion, as explained, by adding the non-water soluble material to the viscid solution of rosin soap, it will be understood that the rosin soap solution may be first mixed with the pulverized material, and that the proper proportion of such material may be afterwards added to the mixture so secured and intimately associated therewith, after which the composition will be formed into bricks or briquettes and then baked; but I find that the results which are secured when this procedure is followed, are not as satisfactory as when an emulsion is first formed, and I prefer to carry out the invention in the manner which I have described in detail. Non-water soluble residuums not of an acid nature and therefore not combining with bases, like soda, and which are suitable for this process, are produced from the distillation of fatty acids and other industrial operations, but petroleum residuum is preferable on account of cheapness and its neutral character in relation to alkalies.

While it is also preferable that the composition of the pulverized material and the improved binder should be first formed into bricks and then baked, it will be understood that the composition can be baked in mass, as I have described in my said patent, and afterwards broken up into lumps or aggregates in any suitable way.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:

AUG 27 1900

1. In the art of ^{described} forming pulverized material into ~~bricks, briquettes, lumps or other aggregates~~, the improvement which consists in adding to the pulverized material a binding substance composed of ^{an aqueous solution of} a soluble rosin soap and a non-water soluble non-acid material having a high boiling point, and in subjecting the mixture so produced to heat, substantially as set forth.

AUG 27 1900

2. In the art of ^{described} forming pulverized material into ~~bricks, briquettes, lumps or other aggregates~~, the improvement which consists in adding to the pulverized material a binding substance composed of ^{an aqueous solution of} resinate of soda and a non-water soluble non-acid material having a high boiling point, and in subjecting the mixture so produced to heat, substantially as set forth.

AUG 27 1900

3. In the art of ^{described} forming pulverized material into ~~bricks, briquettes, lumps or other aggregates~~, the improvement which consists in adding to the pulverized material a binding substance composed of ^{an aqueous solution of} a soluble rosin soap and the residuum obtained from the distillation of petroleum, and in subjecting the mixture so produced to heat, substantially as set forth.

AUG 27 1900

4. In the art of ^{described} forming pulverized material into ~~bricks, briquettes, lumps or other aggregates~~, the improvement which consists in adding to the pulverized material a binding substance composed of ^{an aqueous solution of} resinate of soda and the residuum obtained from the distillation of petroleum, and in subjecting the mixture so produced to heat, substantially as set forth.

AUG 27 1900

AUG 27 1900

5. In the art of ^{described} forming pulverized material into ~~bricks, briquettes, lumps or other aggregates~~, the improve-

AUG 27 1905

ment which consists in forming an emulsion by adding to a ^{aqueous} viscous solution of a rosin soap a non-water soluble non-acid material having a high boiling point, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth.

6. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding to a viscous solution of resinate of soda a non-water soluble non-acid material having a high boiling point, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth.

7. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding to a viscous solution of a rosin soap the residuum obtained from the distillation of petroleum, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth.

8. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding to a viscous solution of resinate of soda the residuum obtained by the distillation of petroleum, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth.

9. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binder composed of a soluble rosin soap and a non-water soluble non-acid material having a high boiling point, in forming the composition into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

AUG 27 1900
10. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binder composed of resinate of soda and a non-water soluble non-acid material having a high boiling point, in forming the composition into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

AUG 27 1900
11. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binder composed of a soluble rosin soap and the residuum obtained from the distillation of petroleum, in forming the composition into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

AUG 27 1900
12. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binder composed of resinate of soda and the residuum obtained from the distillation of petroleum, in forming the composition into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

AUG 27 1900
13. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in first making an emulsion by adding to a viscid solution of a soluble rosin soap a non-water soluble non-acid material having a high boiling point, in adding said emulsion to the pulverized material, in forming the pulverized material into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

AUG 27 1900
14. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding a vis-

acid solution of resinate of soda and a non-water soluble non-acid material having a high boiling point, in adding said emulsion to the pulverized material, in forming the pulverized material into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

15. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding a viscous solution of a soluble rosin soap to the residuum obtained from the distillation of petroleum, in adding such emulsion to the pulverized material, in forming the pulverized material into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

16. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding to a viscous solution of resinate of soda the residuum obtained from the distillation of petroleum, in adding such emulsion to the pulverized material, in forming the pulverized material into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 22nd DAY OF August 1889

Thomas A. Edison

Witnesses:

1. J. H. Randolph
2. J. L. Burn

Oath.

State of New Jersey
County of Essex } ss.:

THOMAS A. EDISON, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States, and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;
THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN THE ART OF BRICKING PULVERIZED MATERIALS

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

Thomas A. Edison

SWORN TO AND SUBSCRIBED BEFORE ME THIS 22nd DAY OF August 1889

(SEAL)

J. H. Randolph
NOTARY PUBLIC.
for New Jersey

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-046.

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C., Aug. 31, 1877.

Dyr. Edmunds Dyr.

Sir:

The oath accompanying the application of

Mr. A. Edison

was administered by

an official

who has failed to attach thereto, or place on file in this office, a certificate of his official character, as required by Rule 47, which reads as follows:

* * * "An oath taken before a notary public or magistrate will not be accepted unless a certificate of the official character of the person administering the oath, stating the date of appointment and term of office, is filed. To obviate the necessity of a separate certificate in each application, a certificate may be furnished with the request that it be filed in the Patent Office for general reference."

EACH CERTIFICATE MUST HAVE A TEN-CENT REVENUE STAMP AFFIXED THEREON AND CANCELED BY THE USER.

In order not to delay the examination of this application, the same has been forwarded to the examiner, who has, however, been instructed not to pass the case to issue until the provisions of said rule have been observed.

By direction of the Commissioner:

Very respectfully,

E. V. Shepard.

Chief Clerk.

NOTE.—If the oath is administered by a notary public in a country foreign to the United States, the certificate of his official character must also state that he is authorized by the laws of his country to administer an oath.

2-020.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

{ Series of 1880

No. 729121

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C.,

Aug. 31, 1889
RECEIVED
SEP
RICHARD V. T.

SIR:

I have to acknowledge the receipt of the petition, specification, oath, and
drawing of your alleged improvement in Art of Bricking
Pulverized Materials

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up
for examination in its order

You will be duly advised of the examination.

Very respectfully,

Cette will be taken up for
examination in about one month.

C. H. Druell
Commissioner of Patents.

Thos. A. Edison
% E. G. Edwards, Manager
31 Nassau St.,
N.Y. City.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification,
oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are
furnished in due form by the inventor or applicant.

RECEIVED
SEP
RICHARD V. T.

Room No. 148
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application, should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., Sept. 30, 1899

Thomas A. Edison,

Care Dyer, Edmon's & Dyer,

31 Nassau St.,

New York, N. Y.

A.M.H.



Please find below a communication from the EXAMINER in charge of your application.

No. 729,121, filed Aug. 31, 1899,—"Art of Bricking Pulverized Materials".

C. H. Duell
Commissioner of Patents.

In claims 1, 2, 3, 4, 5, 6, 7, 8 the forming of the mass into bricks, briquettes, lumps, or other aggregates should be expressed step in the process or the introductory clause thereof amended to correspond.

In claims 9, 10, 11, 12, 13, 14, 15, 16, the introductory clause which includes lumps or aggregates is inconsistent with the recital of the step of forming the material into bricks, or briquettes.

In claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 the residue of soda or soluble soap should be specified as being in a state of aqueous solution.

Claims 1, 2, 5, 6, 9, 10, 13 and 14 are the same in substance, and claims 3, 4, 7, 8, 11, 12, 15, and 16 are also the same in substance, there being substantially but two claims which could be properly prosecuted.

The claims are each rejected on:-
U. S. 125,656, Apr. 16, 1872, Breinig, (Artificial Fuel, Comp.);
and see also:-

U. S. 594,739, Nov. 30, 1897, Hanson, (Artificial Fuel, Comp.).

Ex'r Div. 3.

THOMAS A. EDISON,)
ART OF BRICKING PULVERIZED MATERIAL,)
FILED, AUGUST 31, 1899,) Room No. 149.
SERIAL NO. 729,121.)

HON. COMMISSIONER OF PATENTS,

Sir:

In view of the Examiner's criticism as to the number of the claims, and with the idea in view of presenting the invention in as clear-cut a form as possible, we amend by erasing claims 8 to 16 inclusive, said claims being specific to the five claims which now remain in the case. Present claims 1, 2, 3, 4, and 5, line 1 of each, before "art" insert --described--.

In each of said claims, lines 1 and 2, erase the words "of forming pulverized material into bricks, briquettes, lumps, or other aggregates".

Claims 1 and 3, line 4 of each, after "of", and claims 2 and 4, line 4 of each, before "resinate" insert --an aqueous solution of--.

Claim 5, line 4, before "solution" insert --aqueous--.

Reconsideration of the claims as now presented is respectfully requested.

As applicant points out in the specification with the processes described in his patent No. 455,261, objection was encountered in practice owing to the non-stable character of the aggregates in the presence of considerable moisture. In said patent applicant was granted claims broadly to the method of mixing ores with any resinate, such, for instance, as resinate of soda, so that the claims of the present case are dominated by said

patent, and the present application, if issued, would not broaden applicant's monopoly already secured. In order to remedy the defect in the patented process, applicant describes an addition thereto consisting in adding a relatively small proportion of a non-water-soluble residuum having a high boiling point. The presence of this added ingredient does not affect the highly tenacious character of the resinate, while it enables a minutely thin water-proof film to cover the particles of the material. Obviously, the non-water-soluble residuum must have a high boiling point, since it is required to withstand the relatively high temperature of the baking without volatilization. We do not perceive the pertinence of either of the references cited, particularly when the present application is viewed in the light of an improvement on a process already broadly patented to applicant. Hanson's patent describes the making of fuel blocks of highly combustible hydrocarbons, principally refined petroleum (from 75 to 85 percent), thick turpentine (13 to 8 percent), and pine resin (5 to 2 percent), such hydrocarbons being mixed with a soap formed by saponifying margarin and cocoanut oil with caustic soda. We do not see how this can be said to relate to applicant's art, but if it were admitted that the particular fuel block composition of Hanson were used as a binder for pulverized material, it will be seen that applicant's result would not be secured, since the petroleum forming the larger bulk of the binder is highly volatile. In the Froinig patent, the inventor seeks to make a combustible binder for the manufacture of fuel bricks, by saponifying resin and asphaltum with a suitable caustic alkali. The inventor states: "By preference I may use the resin or asphalt-

use either the one or the other alone, but stating that to effect the saponification of the asphaltum alone a large proportion of alkali is required." We think there can be no doubt but that it was Breinig's idea to use only a resin soap as a binder, and not to use a non-water-soluble, high boiling point ingredient for forming a water-proof coating to the particles, as with applicant's invention.

Reconsideration of the claims is, therefore, respectfully requested.

Very respectfully,

THOMAS A. EWINSON,

By

His Attorneys.

31 Nassau St., New York,

August 27, 1900.

2-246.

Room No. 1494
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

A. M. H.

WASHINGTON, D. C.,

Sept. 18, 1900.

Thomas A. Edison,
Care Dyer, Richards & Dyer,
31 Nassau St.,
New York, N. Y.



Please find below a communication from the EXAMINER in charge of your application.

No. 729,121, filed Aug. 31, 1899,—"Art of Bricking Pulverized Materials".

C. H. Duell
Commissioner of Patents.

Amendment and argument filed Aug. 28, 1900, have been entered and considered.

Soluble rosin soap is always a resinate of sodium or potassium, hence the difference in the terms in claims 1, 2 and 5 and claims 3 and 4 is immaterial. Also, to entitle the resinate as "viscid" in claim 5 is immaterial.

The claims are again rejected on the patent to Bräinig, of record. The composition constituting the binder does not contain sufficient caustic alkali to effect the ^{complete} saponification of the other ingredients.

EX'r Div. 3.

* RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the erasure or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper.

In every application for a patent filed subsequent to December 31, 1897, responsive action must be made by the inventor within one year after the last office action of the case will become abandoned.

THOMAS A. EDISON

ART OF BRICKING PULVERIZED MATERIALS

FILED AUGUST 31, 1899

SERIAL NO. 729,121

ROOM NO. 149.

HON. COMMISSIONER OF PATENTS,

S I R :

In the above-entitled application we hereby appeal to the Examiners-in-Chief from the decision of the Primary Examiner, who on September 18, 1900, rejected for the second time and finally all the claims in the case, and we assign the following reasons of appeal:

1. The Examiner erred in deciding that the processes defined in said claims are not patentable inventions in view of the state of the art;
2. The Examiner erred in rejecting said claims on the reference of record; and
3. The Examiner erred in not allowing said claims.

An oral hearing is requested.

The appeal fee of \$10. is forwarded herewith.

Very respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, November 28, 1900.

Room No.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-044.

DEPARTMENT OF THE INTERIOR,



U. S. Patent Office,

Washington, D. C. Nov 30. 1901. - 180.

SIR:

I have to acknowledge the receipt of the APPEAL ^{to} ~~in the~~ *Ex in chief*

in your application for Improvement in

Art of Bricking Pulverized
Materials.

with *10.* ~~as~~

the fee payable thereon.

Of the result due advice will be given.

Very respectfully,

C. H. Duell
Commissioner of Patents.

Thomas A. Edison

of Dyer, Edmonds & Dyer

31 Nassau Street

New York N. Y.

7710100-08

See if payment is by check or draft the credit granted is subject to the collection of the same.

UNITED STATES PATENT OFFICE.



In re Application of Thomas A. Edison : Before the
Filed Aug. 31, 1899, Ser. No. 729,121, : Examiners-in-Chief,
"Art of Bricking Pulverized Materials". : On Appeal.
----- Div. 3, Dec. 7, 1900.

Examiner's Statement.

The claims finally rejected were:

"1. In the described art the improvement which consists in adding to the pulverized material a binding substance composed of an aqueous solution of a soluble rosin soap and a non-water soluble non-acid material having a high boiling point, and in subjecting the mixture so produced to heat, substantially as set forth.

"2. In the described art, the improvement which consists in adding to the pulverized material a binding substance composed of an aqueous solution of resinate of soda and a non-water soluble non-acid material having a high boiling point, and in subjecting the mixture so produced to heat, substantially as set forth.

"3. In the described art, the improvement which consists in adding to the pulverized material a binding substance composed of an aqueous solution of a soluble rosin soap and the residuum obtained from the distillation of petroleum, and in subjecting the mixture so produced to heat, substantially as set forth.

"4. In the described art, the improvement which consists in adding to the pulverized material a binding substance composed of an aqueous solution of resinate of soda and the residuum obtained from the distillation of petroleum, and in subjecting the mixture so produced to heat, substantially as set forth.

"5. In the described art, the improvement which consists in forming an emulsion by adding to a viscid aqueous solution of a rosin soap a non-water soluble non-acid material having a high boiling point, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth."

The reference cited is:

U. S. 128,656, Apr. 16, 1872, Breinig, (Artificial Fuel Compositions).

The claims in this case relate to a process of making ore brick, but the claims are not limited to the use of pulverulent ore, and cover process of forming bodies consisting in mixing pulverulent material of any kind with rosin soap in solution as a binder and an additional binder which is water-proof, and non-acid such

as a distillate, and particularly petroleum residuum. The reference relates to the manufacture of fuel bricks in which the pulverulent material is bound together by rosin soap and a water-proof material, such as asphaltum or petroleum residuum, etc. In the detail description, see lines 12-37, second column, page 1 of the printed specification, the proportions in which the ingredients are used are three pounds of rosin, one and one-half pounds of water-proof material and one-half pound of caustic alkali. The applicant has urged against this reference that the water-proof material was saponified as well as the rosin, but the applicant was informed the quantity of alkali specified in the patent is incapable of so acting. It is at least doubtful if petroleum residuum is capable of saponification; see:

Druggist Circular, 1885, p. 73, subject "Coal Oil in Soap".

But if it were, in view of the fact that the saponific value of rosin is found to be 174.7 to 194.3; see

Chemical Analysis, Oils, Fats and Waxes, Benedikt, Lewkowitsch, McMillan & Co., London and New York, 1896, p. 167, the one-half pound of caustic alkali is not quite sufficient to saponify all of the three pounds of rosin.

It is submitted that the processes as set forth in the claims are fully anticipated in the patent cited, and that the claims were properly rejected.

The claims have been objected to by the Examiner on account of their needless number, but the Examiner has not refused to entertain the appeal because of the formal objections, since if anything should be found to be patentable in the case, the claim which most clearly expresses it may be selected and allowed.

Respectfully submitted,

Ex'r Div. 3.

(2-051.)

Room No. 848.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,



United States Patent Office,

Washington, D. C.



Thos. A. Edison

2d Type, Edison's & Type,
31 Nassau St.

New York, N.Y.

SIR:

The appeal from the decision of the Examiner in the case of
Thos. A. Edison for a patent for an improvement in
Art of Bricking Pulverized Materials
filed Aug. 31, 1899, Serial No. 129,121, will be heard by the
Examiners-in-Chief, at 2³⁰ P.M. on Wednesday Dec. 19, 1900.

If appellant, or his attorney, shall not appear at that time the hearing will
be regarded as waived, and the case will be decided upon the record.

Very respectfully,

C. H. Dwell
Commissioner of Patents.

(2-051.)

Room No. 242.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,



United States Patent Office

Washington, D. C.



Thos. A. Edison

% Typ. Edmunds & Typ. attys.

31 Nassau Street

New York, N. Y.

SIR:

The appeal from the decision of the Examiner in the case of
Thos. A. Edison for a patent for an improvement in
Art. of Bricking Pulverized Materials
filed August 31, 1899, Serial No. 129,121, will be heard by the
Examiners-in-Chief, at 1 P.M. on Wednesday January 9, 1901.

If appellant, or his attorney, shall not appear at that time the hearing will
be regarded as waived, and the case will be decided upon the record.

Very respectfully,

C. H. Dwell
Commissioner of Patents.

THOMAS A. EDISON

ART OF BRICKING PULVERIZED MATERIALS

FILED AUGUST 31, 1899

SERIAL NO. 729,121

BEFORE THE
EXAMINERS IN CHIEF
ON APPEAL.

BRIEF.

The present application relates to improvements in the bricking of finely pulverized materials, such as iron ore.

Mr. Edison, early in his work in this field, discovered that certain resin soaps possessed great adhesiveness and binding qualities, and he therefore obtained a patent, No. 465,251 dated December 15th 1891, covering broadly a resinate and specifically resinate of soda as a binder for pulverized ores. A soap made by saponifying a resin such as rosin is obviously water soluble, and great difficulty was experienced for this reason in protecting the original briquettes from dampness. They required to be always protected from the weather, to be transported in closed cars, and in every way to be carefully handled.

The objections indicated were of such a serious nature that Mr. Edison applied himself to the production of other binders which would not be soluble. He found that by dissolving rosin in petroleum, by adding the solution to the pulverized ore, and by heating the same to relatively high temperatures to drive off the petroleum, resinate of iron was formed, which bound the particles intimately together and which was non-water-soluble. The briquettes thus formed were entirely waterproof. In order, however, to volatilize the petroleum and to form the iron resinate, the baking temperatures were necessarily high,

involving increased cost of production. Furthermore, it was found that the briquettes could not be immediately loaded upon the cars without danger of fire, so that special appliances were necessary for cooling them before loading. The iron resinate binder is covered in Edison patent number 509,428 dated November 28th 1893.

Mr. Edison then applied himself to the discovery of a binder which would possess the waterproof qualities of iron resinate and would necessitate only the use of the relatively low baking temperatures of the alkaline resinate of his first patent. What he does at the present time, and what is made the subject of the present application, is first the formation of an aqueous solution of a suitable resin soap such as resinate of soda, and the addition thereto of a thick, waterproof, non-acid material having a high boiling point, such as petroleum residuum, the latter forming an emulsion with the solution. This emulsion is then added to the pulverized material, and the latter formed into bricks or briquettes of the proper shape, which are then subjected to a temperature sufficient to drive off the water but not to volatilize the hydrocarbon. It has been found that as soon as all the water in the binder is driven off, the alkaline resinate acts to intimately bind all the particles of the material together, while the heat causes the hydrocarbon to spread evenly throughout the mass, coating each particle with a waterproofing film. Thus the briquettes are impervious to water, while the high temperatures necessary with the iron resinate process are entirely avoided.

The claims which are appealed cover, both generically and specifically, the improvement in the art consisting in the addition to the material of a binder comprising

an aqueous solution of a resin soap such as resinate of soda and a non-water-soluble non-acid material having a high boiling point, such as the residuum obtained from the distillation of petroleum, and in finally subjecting the mixture to heat.

All of the claims are rejected by the Examiner on U.S. patent to Breinig No. 125,656. We submit that the Examiner's explanation of the reference is not only incorrect, but in our opinion unfair. In the first place, the Examiner improperly quotes the reference in order to support his argument; in the next place, the Examiner refers to the reference as disclosing a feature which is not referred to therein; and finally, the Examiner, admitting that the reference on its face is not pertinent, disregards its plain language, denies its statements, and refers in support of his own position to two references which are not of record and which have never before been cited.

In considering the reference, the Examiner states that it —

"relates to the manufacture of fuel bricks in which the pulverulent material is bound together by resin soap and a waterproof material such as asphaltum or petroleum residuum etc."

An examination of the Breinig patent fails to disclose anywhere a reference to resin as the material from which the soap is to be made. Breinig refers generally to the manufacture of a soap by the use of any —

"alkali with a caustic base of such nature that it will saponify in hot or cold contact or boiling with fats, oils or resins",

and throughout the description no particular resin is referred to. If the Examiner in his statement means that Breinig refers to resin or cellopheny (the particular resin referred to by Mr. Edison), then the statement is without foundation. So also is the Examiner's statement that

Breinig refers to "a waterproof material". Such is not the fact. It is true that Breinig refers to the use of "asphaltum", either natural or artificial, but it will be seen that it was Breinig's idea to saponify the asphaltum so as to form a soluble soap. Thus he says, at the top of the second column page 1, that his process "consists in saponifying the resin or asphaltum or both", and in describing the process, in the same column, he states:

"I slowly add the resin and asphaltum, having previously powdered the same or not as I may deem best, and continue the heat upon the solution until the said resin and asphaltum shall be resolved and saponification effected."

Thus it would be as correct for one to state that ordinary toilet soap is waterproof because one of its original ingredients considered alone is of a water-repellent character, as it is for the Examiner to state that with the Breinig reference a waterproof material is utilized in connection with the binder. When the Breinig reference was cited, we called attention to the fact that it appeared entirely clear from the description that either a resin or asphaltum or both could be used, but that in every instance the material was saponified. In his answer the Examiner doubts "if petroleum residuum is capable of saponification", but he argues that even if this were so, "the one-half pound of caustic alkali" referred to in the specification "is not quite sufficient to saponify all of the three pounds of rosin". It seems to us that this language of the Examiner is again more in the nature of the argument of an advocate than that of a statement calculated for the instruction and guidance of the Examiners in Chief. If it be a fact that petroleum residuum is incapable of saponification, it does not follow therefrom that artificial or natural asphaltum is incapable of saponification. If, how-

ever, Breinig was in error in referring, as saponifiable materials, to resins and to asphaltum either alone or together as examples of such materials, when as a matter of fact the resin alone is capable of being saponified, then a person carrying out his suggestion would of course utilize the saponifiable material and not the other. In other words, if a patent, in addition to describing an operative structure, refers also to an inoperative structure, then in the consideration of the patent and in the interpretation of its claims, its readers apply themselves only to its operative parts. What the Examiner does in the present case, however, is to deny the statements made by the patentee, while at the same time he adheres to the entire specification and holds that the asphaltum is not saponified, but that it remains unaffected and forms a water-proofing ingredient. What he should have done, if he considered asphaltum to be incapable of saponification, would have been to disregard the suggestion of Breinig for the use of asphaltum and to regard the patent only as covering the use of a resin. Having thus refused to accept the patentee's statements as correct, and having construed the Breinig patent as covering an entirely different invention from what he describes, the Examiner continues, that even if it be conceded that petroleum residuum is capable of saponification, "the one-half pound of caustic alkali is not quite sufficient to saponify all of the three pounds of rosin", and the inference is to be drawn that the asphaltum used is entirely unsaponified. In the first place, we call attention again to the fact that the Examiner misquotes the reference when he states that rosin is used. The patent in giving a specific instance of desirable proportions states that three pounds of "resin", and not rosin.

is employed. It may be true that one-half pound of caustic alkali is not sufficient to saponify three pounds of rosin, but there may be many forms of resins which could be fully saponified by a much smaller quantity of alkali. The Examiner also failed to note the statement in the patent "that to effect the saponification of the asphaltum alone, a large proportion of alkali is required", from which it must appear that the alkali is always used in sufficient proportions to completely saponify not only all of the resin, but all of the asphaltum. This is further emphasized by the subsequent references in the patent to the fact that the binder used is in the form of a "liquid soap", which is mixed with the material. It seems to us, therefore, entirely clear that with the Breinig patent the patentee's idea was to use either a resin or asphaltum alone or combined, and to completely saponify the same to form a liquid soap as a binder, and that in no instance did Breinig suggest the incomplete saponification of the asphaltum so as to leave the same as an uncombined waterproofing ingredient, as suggested by applicant.

We believe therefore that for these reasons the present invention stands on a foundation of entire novelty, that in fact the Breinig patent is not so closely allied to that invention as applicant's prior patent, which it is the object of the present invention to directly improve, and that therefore all of the claims should be allowed.

Respectfully submitted.

Attorneys for Edison.

New York, January 7, 1901.

T. A. EDISON

ART OF BRICKING PULVERIZED MATERIAL

FILED AUGUST 31, 1899

SERIAL NO. 729,121

ADDITIONAL BRIEF.

Since the argument of the appeal, we have again submitted the Breinig reference to our client, who calls our attention to a point which we omitted to make on the argument. With the Edison invention it is necessary that the heat should not only drive off the water of the solution, but also that it should melt the hydrocarbon and cause the latter to flow so as to spread over all the ore particles to coat each with a waterproofing film.

Thus the specification states that the heat to which the briquettes are subjected may be so high as 600° F. On the other hand, with the Breinig invention, the mass whether molded or not is simply dried "by artificial or natural heat". Assuming, therefore, that in the Breinig composition the asphaltum or other heavy residuum is not saponified, it would not be affected in the slightest degree by a mere drying heat, and would be as inert and -- so far as its waterproofing qualities are concerned -- as valueless as the "pulverized quartz or fine sand" which also are used by Breinig. What is necessary is that the composition should be subjected to a baking heat in an oven whereby the desired operations will take place, the water being first evaporated, and the residuum then melting and running throughout the mass to coat the individual particles.

We suggest, therefore, that each claim be amended by inserting after "heat" the following -----sufficiently

high to evaporate the water and to melt the non-water-soluble material to permit the flowing of the latter throughout the mass-----.

We hope the Examiners-in-Chief may recommend this amendment if in their opinion the case presents invention.

It seems to us that the patent ought to be granted for the reason that if the Breinig patent is to operate as a bar it must be found (1) that resin is the particular resin to which Breinig refers, (2) that a liquid and hence soluble soap is not formed as Breinig describes, and (3) that the heat used by him is very much greater than that necessary to perform a drying operation. We do not believe that the reference can be so construed.

Very respectfully,

Attorneys for Edison.

New York, January 11, 1901.

No. 23,235

U. S. Patent Office, Jan. 15, 1901.

Before the Examiners-in-Chief, on Appeal.

Application of Thomas A. Edison for a patent for an improvement in the Art of Bricking Pulverized Materials, filed August 31, 1899. Serial No. 729,121.

Messrs. Dyer, Edmonds & Dyer for appellant.

The claims appealed are:

"1. In the described art the improvement which consists in adding to the pulverized material a binding substance composed of an aqueous solution of a soluble rosin soap and a non-water soluble non-acid material having a high boiling point, and in subjecting the mixture so produced to heat, substantially as set forth.

"2. In the described art, the improvement which consists in adding to the pulverized material a binding substance composed of an aqueous solution of resinate of soda and a non-water soluble non-acid material having a high boiling point, and in subjecting the mixture so produced to heat, substantially as set forth.

"3. In the described art, the improvement which consists in adding to the pulverized material a binding substance composed of an aqueous solution of a soluble rosin soap and the residuum obtained from the distillation of petroleum, and in subjecting the mixture so produced to heat, substantially as set forth.

"4. In the described art, the improvement which consists in adding to the pulverized material a binding substance composed of an aqueous solution of rosinate of soda and the residuum obtained from the distillation of petroleum, and in subjecting the mixture so produced to heat, substantially as set forth.

"5. In the described art, the improvement which consists in forming an emulsion by adding to a viscid aqueous solution of a rosin soap a non-water soluble non-acid material having a high boiling point, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth."

The reference is patent to

Breinig, April 16, 1872, No. 125,656.

The specification of this application generally states the nature of its invention as follows:

"My invention relates to the art of bricking pulverized material, and particularly to the bricking of pulverized ore and coal, but the improvement may be carried out with any other finely divided substance which it is desired to form into compact, solid bricks or briquettes."



And it also states:

"When lighter pulverized materials than iron ore are to be bricked, the quantity of the resinate or other rosin soap requires to be augmented, owing to the increase in the bulk of the material"

So the invention applies to pulverized materials generally, and especially to coal and ore.

Breinig's patent discloses an invention for bricking coal

The invention is a heating material. The ingredients are as follows:

Breinig.			Edison.		
Soda,	1,	10%	1	-----	16.4%
Rosin,	6,	60%	12	- - -	76.9%
Residuum of Petroleum	3,	30%	0.26	----	16.6%

Breinig's printed specification has "resin" as its rosinous ingredient. In such a coarse mixture we should interpret this to be the cheap and common rosin known as rosin. But we are not compelled to so interpret it, as the original specification in the file of the application for his patent, which went to patent without any amendment, used the word rosin in the formula and in every place in the specification excepting once, being on the 17th line from the bottom of column 2 of page 1 of the printed specification.

So the ingredients of the two compositions are the same and the proportions substantially the same, and neither the patentee nor the applicant limits the invention to any particular proportion, nor does the applicant intimate that there is any especial utility in any particular proportion.

The contention on behalf of the applicant is that the patentee's invention is a composition in which the asphaltum is saponified, that anyone attempting to practice that invention would necessarily make a composition in which the asphaltum is saponified; that in his composition the asphaltum is not saponified and

that no one could get from the specification of the patent any idea of a binder in which the asphaltum is not saponified; and that for these reasons the patent does not disclose his binding material.

We cannot concur in such an interpretation of the invention of the patent.

The specification of the patent discloses a specific composition made of specific ingredients in a specified manner. A formula directs the public as to the ingredients and proportions to be used and the specification states the manner of compounding them and submitting them to molding and to a drying, in natural or artificial heat.

That composition so made and used as a binder for coal-brick, is the invention of the patent. That composition is what the public now have a right to use, the patent having expired. It is not the theory of action which controls in the interpretation of a patent. The theory of a patentee may be entirely erroneous and yet the thing which he invented may be protected by his patent.

The applicant may have been of opinion that the asphaltum was saponified in the particular composition which he specifies as exhibiting his invention, and he may have been mistaken as to that. But whether he was or not is of no consequence. He made known to the public a specific composition for bricking coal. That is his invention. It now belongs to the public who have nothing to do but to make the composition and to use it for its useful purposes, regardless of whether or not the asphaltum in it is saponified.

Also this patentee had a monopoly of his new bricking material although he may not have appreciated all of its qualities. Yet it does not follow that he did not appreciate them because he did not mention them. It is to be presumed that he intended his brick-fuel to be weather-proof by putting in the asphaltum, and it

is not to be presumed that he would so make it as to nullify the usefulness of the asphaltum.

As this applicant has and claims no more than the brick-making material of the patent in ingredients, proportions and manner of making, and using, he gets only the utilities of that material.

The decision of the Examiner is affirmed.

W. H. Looming
J. H. Richardson
J. G. Looming } Examiners-in-Chief.

Case No. 1012,

Abandoned,

Filed Aug. 31, 1899.

Improvements in the Art of Bricking Pulverized
Material.

C l a i m s .

1. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binding substance composed of a soluble rosin soap and a non-water soluble non-acid material having a high boiling point, and in subjecting the mixture so produced to heat, substantially as set forth.

2. In the art forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binding substance composed of resinate of soda and a non-water soluble non-acid material having a high boiling point, and in subjecting the mixture so produced to heat, substantially as set forth.

3. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binding substance composed of a soluble rosin soap and the residuum obtained from the distillation of petroleum, and in subjecting the mixture so produced to heat, substantially as set forth.

4. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binding substance composed of resinate of soda and the residuum obtained from the distillation of petroleum, and in subjecting the mixture so produced to heat,

substantially as set forth.

5. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding to a viscid solution of a rosin soap a non-water soluble non-acid material having a high boiling point, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth.

6. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding to a viscid solution of resinate of soda a non-water soluble non-acid material having a high boiling point, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth.

7. In the art of forming pulverized material into bricks, briquettes, lumps and other aggregates, the improvement which consists in forming an emulsion by adding to a viscid solution of a rosin soap the residuum obtained from the distillation of petroleum, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth.

8. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding to a viscid solution of resinate of soda the residuum obtained by the distillation of petroleum, in adding such emulsion to the pulverized material, and in subjecting the composition so obtained to heat, substantially as set forth.

9. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improve-

ments which consists in adding to the pulverized material a binder composed of a soluble rosin soap and a non-water soluble non-acid material having a high boiling point, in forming the composition into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

10. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binder composed of resinate of soda and a non-water soluble non-acid material having a high boiling point, in forming the composition into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

11. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binder composed of a soluble rosin soap and the residuum obtained from the distillation of petroleum, in forming the composition into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

12. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in adding to the pulverized material a binder composed of resinate of soda and the residuum obtained from the distillation of petroleum, in forming the composition into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

13. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in first making an emulsion by adding to a viscid solution of a soluble rosin soap a non-water soluble non-acid material having a high boiling point, in adding said emulsion to the pulverized material, in forming the pulverized material into bricks or briquettes, and in

baking said bricks or briquettes, substantially as set forth.

14. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding a viscid solution of resinate of soda and a non-water soluble non-acid material having a high boiling point, in adding said emulsion to the pulverized material, in forming the pulverized material into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

15. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding a viscid solution of a soluble rosin soap to the residuum obtained from the distillation of petroleum, in adding such emulsion to the pulverized material, in forming the pulverized material into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

16. In the art of forming pulverized material into bricks, briquettes, lumps or other aggregates, the improvement which consists in forming an emulsion by adding to a viscid solution of resinate of soda the residuum obtained from the distillation of petroleum, in adding such emulsion to the pulverized material, in forming the pulverized material into bricks or briquettes, and in baking said bricks or briquettes, substantially as set forth.

No. 2302

C. 1013

Serial No. 731137

Applicant.

Thomas A. Edison

Address. ✓

Title

Inpts. in Phonographs

Filed

September 21-1899Examiner's Room No. 219

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1. Replied Oct. 25, 1899.2. Agreement Dec. 8, 1899.3. Replied Dec. 28, 1899.4. Agreement Dec. 4, 1900.5. Replied Dec. 15, 1900.6. Agreement Nov. 8, 1901.7. Replied Nov. 20, 1901.

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30.

RICHARD N. DYER,

31 Nassau Street,

NEW YORK CITY.

Dyer =

Take this out in France
England & Germany &
Austria as well -

Edison

Aug 24th 99

Object of the invention is to produce very loud reproduction of sound on phonograph.

RECEIVED
AUG
1899
RICHARD H. DY

The invention consists in

The use of a sensitive or diaphragmic record as is possible & proportioning

The number of threads per inch so that the greatest depth of indentation will not use up the surface and cut into the parallel record - Up to the present time, the widths have been

With the Circular Cutter² on wax & reproducing ball too of an inch if the Record is made very sensitive. The width of too of an inch is insufficient to give the required depth without at the same time causing the indentation to cut into the ~~parallel~~ adjoining threads hence there will be Echoes ~~off~~ in reproducing due to these overlapping

13

indentations to obviate
this I proportion the
space for recording to the
sensitivity of the recorder.
The most sensitive recorder
which it is practicable
to use requires as
space ~~of~~ which is given
by 75 threads per inch
+ even in this case with
very loud sounds there
is a slight lapping
but 75 threads or less
is necessary to obtain
maximum results with

14

present recorders -
heretofore it has been the
practice to use recording
knives from 35 to 40
diameters - ~~the~~ the
smaller the diameter
of the recording knife
the greater can be the
depth of the indentation
on any given threads per
inch without the
indentation cutting into
the adjacent record

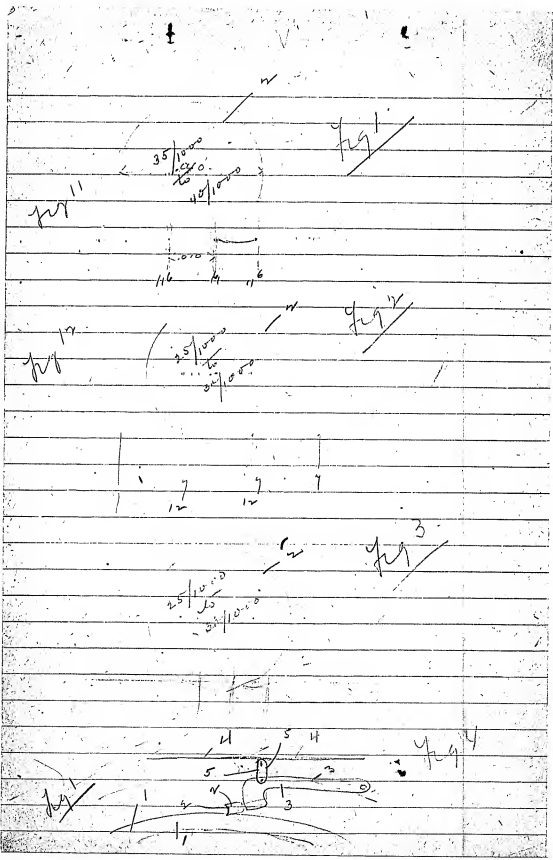
If the diameter is made very much less than $30/1000$ - The wax is not cut properly the bottom of the indentations being rough - The best commercial diameter is from 30 to $25/1000$ Diameter of this size employed with a cylinder with 75 or less threads per inch gives the best results - The surface

Velocity to give the maximum loudness should not be less than 150 ft per minute any greater speed does not materially increase the loudness -

Claims -

~~The combination of a cylinder with a diameter of 30/1000 and a velocity of 150 ft per minute~~
Study out claims

J. H. E. Linn



LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 448,
SAMUEL O. EDMONDS,
REGISTRATION NO. 449,
FRANK L. DYER,
REGISTRATION NO. 446.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER THOMAS A. EDISON, a citizen of the United States, residing and having his post office address at Llewellyn Park in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT IN
PHONOGRAPHS

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN PHONOGRAPHS, ^(Case No. 1013) of which the following is a specification:-

My invention relates to various new and useful improvements in phonographs, and the object of the invention is to provide a phonograph wherein the reproduction secured may be improved both in loudness and in quality. The standard phonographs and allied talking machines are provided with cylindrical phonograms, in which a spiral record groove will be formed, having a pitch of one hundred threads per linear inch. Experience has demonstrated the superiority of the type of recording device described in my ^{U. S.} patent No. 430,278, by which will be obtained a record composed of a series of more or less connected gouges, waves or depressions, all of greater width than depth, and presenting in cross-section at any point an arc of a circle, due to the curved cutting edge of the recorder. Since the width of the space in which the record is formed is limited to .01 of an inch, a restriction is imposed upon the depth to which it may be permissible to form the record in the blank.

In order that the recording device may not exceed the proper limits, relatively insensible diaphragms are employed, but even when diaphragms of this character are used some of the depressions or waves are cut to so great a depth that they lap over upon the adjacent record already formed

and upon the space to be occupied by the record to be cut upon the next rotation of the blank. This overlapping of the record results in the production of echoes, or, in other words, in the accompaniment with the sounds reproduced by the engagement of the reproducer with the record groove, of a faint reproduction of the sounds produced by the engagement of the reproducer with the overlapping or extended portions of the adjacent record. The formation of these echoes in the reproduction is objectionable.

At the present time, in the talking machine art, the circular recording devices have been made with a diameter varying from .035 to .040 of an inch. Although with a recording device of less diameter the depth of the waves or indentations of the record could be increased without overlapping, this could only be done at a sacrifice of the quality of the record, since with recording devices having a diameter considerably less than .030 of an inch, the composition of the blank will not be cut smoothly at the bottom of the record.

What I propose by my present invention is the production of a phonograph wherein a recording device may be employed having a curved cutting edge, said recording device being sufficiently large to secure the best commercial results, say from .025 to .030 of an inch in diameter, and to employ therewith a very sensitive diaphragm, or, if the present diaphragms are used, to make possible the recording of sounds of increased volume without overlapping of the record.

In carrying out my invention, I preferably employ as sensitive a diaphragm as possible for actuating the recording device and proportion the number of threads per inch of the record with respect to the sensitiveness of such diaphragm,

so that the diaphragm will be free to respond to original sounds to actuate the recording device in the formation of a record groove which shall be free from overlapping, of relatively great amplitude and free from objectionable roughness.

In order that the invention may be better understood, attention is directed to the accompanying drawing, forming a part of this specification, and in which

Figure 1 is a diagrammatic view, showing a circular recording device in cross-section and illustrating the recording device cutting a record in a phonograph blank having a pitch of one hundred threads to the inch, the record being cut to the maximum depth which can be secured without overlapping;

Figure 2, a corresponding view of my present improvements;

Figure 3, a corresponding view, showing the extent of overlapping which would take place if my improvements were employed in connection with a phonograph blank having a pitch of one hundred threads per inch; and

Figure 4, a cross-section, through a portion of the blank, of the recorder and diaphragm of the general type shown in my said patent.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 represents a phonograph blank which is made of the usual soaplike composition; 2, the recording device, having a curved cutting edge; 3, the pivoted lever carrying said recording device; and 4, the diaphragm connected to the lever by a link 5, said diaphragm being preferably of as great sensitiveness as possible.

In figures 1, 2 and 3, I show the head of the recording device as having the cutting edge in the form of a true circle, as is desirable. Heretofore it has been the practice to make the recording devices with a diameter ranging from .035 to .040 of an inch, as indicated in figure 1. The vertical lines 6, 6, 6, in figure 1, illustrate the extent in width of the available surface on the phonograph blank having a pitch of one hundred threads per inch. The recorder 2, in figure 1, it will be observed, has entered the blank to an extent to occupy the entire distance between two of the lines 6, 6, so that the record which is being formed is of a maximum width, if the production of echoes is to be avoided, as is desirable. Taking the depth indicated as a maximum possible at the present time to secure in the art, it is the practice to so adjust the recording device that it will normally engage or track the record to about half this extent, so that in making a maximum vibration overlapping will be avoided as the diaphragm moves towards the record, and the danger of the recording device leaving the surface of the blank will be overcome upon the return movement. It is difficult, however, to realize these ideal conditions, and at the present time almost all records are partly characterized by the objectionable overlapping referred to. In order that the extent of the vibrations possible with a recording device of the diameter indicated, working on a blank having a pitch of one hundred threads to the inch, may be properly controlled, the diaphragms by which the recorders are operated are made preferably relatively insensible or else care is taken not to impress upon them sounds of too much volume.

Referring to figure 2, the recording device 2 is represented as having a diameter from .025 to .030 of an

inch, and the record with which such a recorder cooperates is provided with a pitch of not more than seventy-five threads per linear inch, as indicated between the lines 7, 7.

7. Obviously the space allowed for the formation of a record in this instance is considerably more than at the present time, and since the diameter of the recorder is slightly less, the entire space to be occupied by the record can be utilized in the formation of indentations of considerably greater amplitude than is now possible. The difference in the amplitude of vibrations which it is possible to secure with my present improvements is graphically shown by a comparison of the two figures. Since vibrations of much greater amplitude can be secured with my present improvements, the recorder can be adjusted to track to a correspondingly greater depth than is now feasible, and the diaphragm 4 can be made correspondingly more sensitive or can be impressed with sounds of correspondingly greater volume. By thus observing the correct proportions between the sensitiveness of the diaphragm or the volume of the sounds impressed thereon and the width of the space offered for the making of the record, it is possible to obtain phonographic records which are of greater amplitude than have been heretofore secured, not characterized by an objectionable overlapping upon the adjacent grooves. The extent of overlapping which would take place if an attempt were made to use a sensitive diaphragm with a phonograph blank having a pitch of one hundred threads per inch, the assumption being that the record shall be of as great an amplitude as I have shown in figure 2, is very clearly illustrated in figure 3, from which it will be seen that the record which is being formed has overlapped almost halfway upon the record already formed at the right, and upon

the left has occupied almost half the space which is to be taken up in the formation of the record at that point when the blank has made a complete further turn.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:-

1. In a phonograph, the combination with a recording device having a curved cutting edge and a diaphragm connected to said recording device and adapted to be impressed by original sounds, of a phonograph blank with which the recorder co-operates to form a spiral record groove having a pitch sufficiently coarse to allow for the formation without overlapping of the depressions representing an abnormal amplitude, substantially as set forth.

2. In a phonograph, the combination with a recording device having a curved cutting edge and a diaphragm of high sensitiveness, of a phonograph blank with which the recorder co-operates to form a spiral record, the pitch of which is proportional to the sensitiveness of the diaphragm, to allow for the formation without overlapping of waves or depressions of an abnormal amplitude, substantially as set forth.

3. In a phonograph, the combination with a recording device having a curved cutting edge and a diaphragm connected to said recording device and adapted to be impressed by original sounds, of a phonograph blank with which the recorder engages to form a record groove having a pitch of not more than seventy-five threads per linear inch, substantially as set forth.

4. In a phonograph, the combination with a recording device having a curved cutting edge and a diaphragm of high sensitiveness, of a phonograph blank with which the re-

*Entered
Dec. 11, 1900
and Sub. 1*

DEC - 4 1900

and not the recording method in itself, sounds of abnormal amplitude

recorder engages to form a record groove having a pitch of not more than seventy-five threads per linear inch, substantially as set forth.

DEC - 4 1900
5. In a phonograph, the combination with a recording device having a curved cutting edge with a diameter of not less than .025 of an inch, and a diaphragm connected to said recording device and adapted to be impressed by original sounds, of a phonograph blank with which the recorder cooperates to form a spiral record groove having a pitch sufficiently coarse to allow for the formation without overlapping of depressions representing an abnormal amplitude, substantially as set forth.

DEC - 4 1900
6. In a phonograph, the combination with a recording device having a curved cutting edge with a diameter of not less than .025 of an inch, and a diaphragm of high sensitiveness, of a phonograph blank with which the recorder cooperates to form a spiral record, the pitch of which is proportional to the sensitiveness of the diaphragm, to allow for the formation without overlapping of waves or depressions of an abnormal amplitude, substantially as set forth.

3. As a new article of manufacture, a phonogram having a record cut spirally on its surface, said record being composed of a series of more or less connected gouges or ^{representing all existing relative shallow areas} waves having a greater width than depth and further characterized by freedom from overlapping, substantially as set forth.

4. As a new article of manufacture, a phonogram having a record cut spirally thereon with a pitch of not less than seventy-five threads per linear inch, said record being formed of a series of more or less connected gouges or ^{and representing all existing relative shallow areas} depressions bearing a definite relation in breadth to depth, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS

12th DAY OF Sept 1899

Thomas A. Edison

Witnesses:

1. J. G. Randolph
2. Edwin C. Hagerty

Oath.

State of New Jersey } ss.
County of Essex

THOMAS A. EDISON

, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;
THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN PHONOGRAPHS

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

SWORN TO AND SUBSCRIBED BEFORE ME THIS

12th DAY OF Sept.

1899

(SEAL)

J. G. Randolph
NOTARY PUBLIC.

Case No 1013

1 Sheet

Serial No. 731,137

Fig. 1

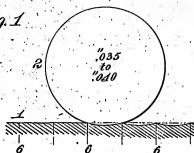


Fig. 2

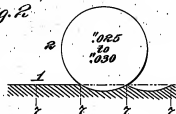


Fig. 3

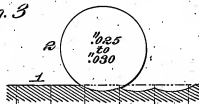
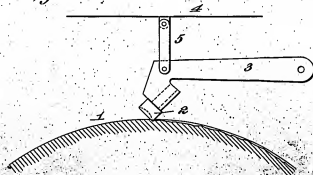


Fig. 4



Witnesses:

Jas. F. Coleman
Geo. A. Taylor

Inventor

James H. Adams
By Roger Edmundson

Att'ys.

2-020.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C., *Sept. 21, 1889*

SIR:

I have to acknowledge the receipt of the petition, specification, oath, and
drawing of your alleged improvement in *Phonographs*

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up
for examination in its order

You will be duly advised of the examination.

Very respectfully,

Case will be taken up for
examination in about one month.

C. H. Duell
Commissioner of Patents.
Thos. A. Edison
% Dyer, Edmonds & Dyer,
37 Nassau St., N.Y. City.

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (where the nature of the new claims of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are furnished in due form by the inventor or applicant.

Series of 1880.

No. *731137*



NOTE.—Payment is made by check or draft, the credit of which is subject to the collection of the same.

2-001.

Room No. 219
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,

J. H. D.

UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., October 25, 1899.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

#31 Nassau Street,

New York, N.Y.

MAILED

OCT 25 1899

U. S. Patent Office

Please find below a communication from the EXAMINER in charge of your application.

for Phonographs, filed sept. 21, 1899, serial number 731,137.



Claims 1, 2, 3, 4, 7 and 8 are rejected on
Jacques, #413,282, October 22, 1899, Phonographs. The model shows
threads of a pitch less than 75 per inch, in fact about 50 per
inch, there are waves of less depth than width and the threads
are characterized by freedom from overlapping.

Claims 5 and 6 are rejected on Jacques as above, in view of
Edison #430,278, June 17, 1890, Graphophones, which latter shows
cylindrical either the size of which relative to the pitch of screw
being a matter of judgment and convenience than invention.

RULE 72. In every amendment the exact word or words to be stricken out or inserted in the application must be specified
and the precise point indicated where the change or insertion is to be made. All such amendments must be on sheets of paper
separate from the papers previously filed, and written on but one side of the paper.

THOMAS A. EDISON

PHONOGRAPHS

FILED SEPTEMBER 21, 1899

SERIAL NO. 731,137

ROOM NO. 219.

HONORABLE COMMISSIONER OF PATENTS,

S I R :-

The Examiner's attention is directed to the fact that the first six claims are all limited to the use in the combination of a recording device having a curved cutting edge. The use of such a recording device resulted in the objectionable overlapping which applicant refers to in his specification, which overlapping is overcome by applicant by means of the invention recited in the specification. The patent to Jacques cited by the Examiner against all the claims, does not employ a recorder having a curved edge, and it would therefore be immaterial to Jacques whether the threads of the record were of one pitch or another. Jacques refers in his patent only to the employment of a "sharp pointed stylus", which could not possibly cut a curved record. So far as the seventh and eighth claims are concerned, each of said claims is limited to the formation of a record which shall be of greater width than depth. This is not the case with Jacques, since the use of a sharp pointed stylus would inevitably result in the production of a record having a greater depth than width. The remarks of the Examiner as to the fifth and sixth claims seem to have been incorrectly transcribed by the typewriter.

Very respectfully,

Attorneys for Edison.

New York, December 8, 1899.

2-571.

Room No. 212.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., December 28, 1899.



J. H. D.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,
#31 Nassau Street,
New York, N.Y.

MAILED.

DEC 28 1899

U. S. Patent Office

Please find below a communication from the EXAMINER in charge of your application.
for Phonographs, filed Sept. 21, 1899, serial number 731,137.

C. H. Duell
Commissioner of Patents.

The claims in this case are all rejected on the patent to Jacques of record. The model in said patent has a record, the pitch of which is approximately fifty threads to the inch. This record appears to have been cut with a curved tool and the gouges are broader than they are deep. There appears to be no overlapping on this record.

The claims are furthermore rejected on the patent to Edison of record. The difficulty that applicant is endeavoring to cure by the means set forth in this application is well known in the

RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the change or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper.

art and the means by which he undertakes to cure it are not such as amount to invention over the patent cited but amount merely to a matter of calculation. If two grooves overlap, it would seem to be quite obvious to any one skilled in the art who should wish to prevent this overlapping to make the grooves of greater pitch, and it is also a matter of mere mechanical calculation and not a matter of invention to make the stylus of less diameter as a means of giving the groove the same depth as before without giving it so great a breadth.

It is not known what is meant in several of the claims by a spiral record, the pitch of which is proportional to the sensitiveness of the diaphragm. This expression is altogether indefinite. It would be impossible in any particular case to say whether or not the pitch of the record was proportional to the sensitiveness of the diaphragm which made it.

Claim 7 is rejected on any well made phonograph record.

Claim 8 is objected to on the ground that applicant has not set forth a record in which the gouges or depressions bear a definite relation in breadth to depth. The ratio of the breadth of a groove cut by a curved stylus to its depth depends on the depth of the groove. The deeper the groove, the less would this ratio be.

THOMAS A. EDISON :

PHONOGRAPHS :

FILED SEPTEMBER 21, 1899 :

ROOM NO. 219.

SERIAL NO. 731,137 :

HONORABLE COMMISSIONER OF PATENTS,

S I R :-

Without prejudice, we amend as follows:

Cancel claims 1 and 2, and substitute:

----- 1. In a phonograph, the combination with a recording device having a curved cutting edge representing a shallow arc of sufficient extent to be only partially engaged with the recording material in recording sounds of abnormal amplitude, and a diaphragm connected to said recording device and adapted to be impressed by original sounds, of a phonograph blank with which the recording device cooperates to normally form a shallow spiral groove therein, the relative lateral feed of the blank and recording device giving to the record groove a sufficient pitch to prevent the cutting edge from overlapping in the recording of such abnormal sounds, substantially as and for the purposes set forth.-----

Change the numeral of claim 3 to 2, and in said claim, line 2, erase the word "curved", and after "edge" in said line insert ----- representing a shallow arc of sufficient extent to be only partially engaged with the recording material in recording sounds of abnormal amplitude-----

Cancel claims 4, 5 and 6, and change the numerals of claims 7 and 8, to 3 and 4.

Present claim 3, line 4, after "depth" insert ----- representing at all sections relatively shallow arcs -----

Present claim 4, line 5, erase "bearing a definite relation in breadth to depth", and substitute ----- and representing at all sections relatively shallow areas -----

The subject-matter of claim 1 is designed to take the place of claims 1 and 2 which have been erased, but to set forth more clearly applicant's advance in the art, and at the same time to distinguish from the patent to Jacques which the Examiner refers to and wherein the record is made with a pointed recorder. By the expression "the pitch of which is proportional to the sensitiveness of the diaphragm" in erased claim 2, and the expression "a diaphragm of high sensitiveness" in erased claim 4, applicant meant that as the pitch of the record was increased, the sensitiveness of the diaphragm could be also increased. Such a construction being in fact a part of applicant's invention and necessarily following from the increase in the pitch of the record groove, a claim on the latter feature manifestly includes the former.

The claims as now presented are fully distinguished from the Jacques patent, wherein it is stated that the record is formed by a "sharp pointed stylus". If the model on record shows a record which "appears to have been cut with a curved tool", it must be a fact that the model does not represent the Jacques invention. We assume, however, that by the expression "sharp pointed stylus" Jacques has reference to a stylus made as sharp as practicable, and that therefore the extreme cutting edge thereof may be formed on a curve of relatively small diameter, or, in other words, that the stylus is, microscopically considered, relatively blunt. A record formed with a stylus of this character could not possibly overlap, even if the pitch of the record groove were made finer than the present standard.

Applicant's prior patent does not meet the claims as they are now presented, because, as stated in the specification of the present case, with a record formed of the standard pitch, overlapping is inevitable, and this is the case with the reference.

Very respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, December 4, 1900.

2-240.

Room No. 212. *X*
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,

J. H. D.

UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., December 15, 1900.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

#31 Nassau Street,

New York, N. Y.

MAILED.

DEC 15 1900

U. S. Patent Office



Please find below a communication from the EXAMINER in charge of your application.

for Phonographs, filed Sept. 21, 1899, serial number 731,137.

C. H. Duell
Commissioner of Patents.

Claim 1 presented in the amendment filed the 7th inst., and claims 2, 3 and 4 are rejected on the grounds of rejection and the references cited of record. The devices claimed in claims 1 and 2 seem to involve merely the use of the devices shown in the patent of Jacques and applicant's patent cited, in a way that experiment, experience and judgment would suggest. There appears to be no novelty in the mechanical parts referred to in the claims.

Claims 1 and 2 define combinations of parts and claims 3 and 4 define the phonograph record as an article. Since records

NOTE.—In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the emendation or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper.

NOTE.—Every application for a patent filed subsequent to December 31, 1897, requires a preliminary action must be made by the inventor within one year after the date of filing of the same will become abandoned.

(2)

✓ have acquired a distinct^t_λ status in the art as a separate subject of manufacture and sale, division must be required to the end that claims for the combinations of parts be defined in one application and claims for the record be prosecuted in another application, applicant electing which alleged invention he will further prosecute in this application.

THOMAS A. EDISON

PHONOGRAPHS

FILED SEPTEMBER 21, 1899

SERIAL NO. 731,137

EXAMINER'S ROOM NO. 219.

HONORABLE COMMISSIONER OF PATENTS,

S I R :—

We note that the Examiner still rejects the new first claim, as well as the remaining claims as amended, in view of the patents to Jacques and to Edison of record. The issue between the Examiner and ourselves seems to be only a question of opinion, on which we have already expressed our views as fully and clearly as possible. In requesting a reconsideration, therefore, for the purpose of appeal, we reiterate the arguments which have already been made, and express the hope that the Examiner may favorably entertain the claims in view of the meritorious character of applicant's invention. A rejection on the ground of lack of invention where the references admittedly are insufficient, should not, we submit, be taken except in the clearest kind of a case. That, we believe, is not the situation here.

We note that in his last letter the Examiner for the first time raises the question of division, but we hope that that question may be held in abeyance until the appeal is definitely settled. Should the appeal be unsuccessful, applicant would in this way be relieved of the expense of filing a separate divisional application; whereas on the other hand, if the case were divided, a favorable decision as to one set of claims might not necessarily carry the other claims in its terms. It is therefore only as a matter of

expedience and economy that we make the request at this time.

Very respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, November 8, 1901.

REMARK 77. In every submission the exact work on words to be withdrawn and/or inserted in the application must be specified, and the precise point indicated where the change or insertion is to be made. All such communications must be in strict conformity with the papers previously filed, and written on but one side of this paper.

Room No. 310
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-244.

J. H. D.
DEPARTMENT OF THE INTERIOR,

UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.

November 20, 1901.

Thomas A. Edison,
Care Dyer, Edmonds & Dyer,
#31 Nassau Street,
New York, N. Y.

MAILED.
NOV 20 1901
U. S. Patent Office

Please find below a communication from the EXAMINER in charge of your application.
for Phonographs, filed Sept. 21, 1899, serial number 731,137.

R. I. Allen.
Commissioner of Patents.

This action is made responsive to the letter from applicant dated the 8th and filed the 9th instant.

The office can add no other grounds of rejection of the claims to those of record. Applicant seems simply to have proportioned existing parts in such a way that the sound grooves may not overlap without making any substantial structural change.

Applicant's attention is invited to the following decisions that views unfavorably statements of result, ^{and objection} function in claims... See ex parte Schweitzer 97 O.G., 1371, in view of which claims 1 and 2 are objected to. The claims are all again rejected in view of former grounds of rejection. Referring to the matter of division, final action in this matter will be deferred in view of the conditions referred to in applicant's letter above referred to.

Richard L. Dyer,
Samuel R. Edwards,
Frank E. Dyer.

Two Offices
Dyer, Edmunds & Dyer,
Sprinkler, Patent & Patent Attorneys,
31 Nassau Street,

*Richard L. Dyer,
Samuel R. Edwards,
Frank E. Dyer,*

New York November 10, 1902.

Thomas A. Edison, Esq.,
Orange, N. J.

Dear Sir,-

On September 21st 1899 we filed for you an applica-
tion (E. 1013) covering an improvement in phonographs con-
sisting in making the threads 75 to the inch instead of 100
to the inch, and preferably reducing the diameter of the re-
cording device to from .025 to .03 of an inch instead of from
.035 to .04 of an inch, as at present used. The general
idea was to secure very deep records without overlapping.
The Examiner rejects the case, and if anything further is
to be done it must be by way of appeal, which requires to be
taken before the 20th of this month. We wish therefore that
you would give the matter your early attention, in order that
we may take the appeal, if necessary, in time. The position
of the Examiner, broadly speaking, is that no invention would
be required to overcome overlapping merely by increasing the
pitch of the feed, or by reducing the diameter of the record-
er, or by both of these expedients. No reference has been
cited showing the invention specifically. We believe that
the Examiners in Chief would be disposed to sustain the Ex-
aminer in his rejection, and therefore doubt if the appeal
would be successful. Our view of the case therefore is that

*If there is no invention in this
then there can be no invention in
making the threads larger the office
is incompetent - let it lapse*

E

the application should be dropped, unless of course you can suggest some argument which would support the patentability of the invention.

Yours truly,

Alfred E. Edwards

FED/AL

THOMAS A. EDISON
IMPROVEMENTS IN PHONOGRAPHS
FILED SEPTEMBER 21, 1899
SERIAL NO. 731,137

:
:
:
: OUR NO. 2302.
:
: EDISON'S NO. 1013.
:
:

CLAIMS.

1. In a phonograph, the combination with a recording device having a curved cutting edge and a diaphragm connected to said recording device and adapted to be impressed by original sounds, of a phonograph blank with which the recorder coöperates to form a spiral record groove having a pitch sufficiently coarse to allow for the formation without overlapping of the depressions representing an abnormal amplitude, substantially as set forth.

2. In a phonograph, the combination with a recording device having a curved cutting edge and a diaphragm of high sensitiveness, of a phonograph blank with which the recorder coöperates to form a spiral record, the pitch of which is proportional to the sensitiveness of the diaphragm, to allow for the formation without overlapping of waves or depressions of an abnormal amplitude, substantially as set forth.

3. In a phonograph, the combination with a recording device having a curved cutting edge and a diaphragm connected to said recording device and adapted to be impressed by original sounds, of a phonograph blank with which the recorder engages to form a record groove having a pitch of not more than seventy-five threads per linear inch, substantially as set forth.

4. In a phonograph, the combination with a recording device having a curved cutting edge and a diaphragm of high sensitiveness, of a phonograph blank with which the recorder engages to form a record groove having a pitch of not more than seventy-five threads per linear inch, substantially as set forth.

5. In a phonograph, the combination with a recording device having a curved cutting edge with a diameter of not less than .025 of an inch, and a diaphragm connected to said recording device and adapted to be impressed by original sounds, of a phonograph blank with which the recorder cooperates to form a spiral record groove having a pitch sufficiently coarse to allow for the formation without overlapping of depressions representing an abnormal amplitude, substantially as set forth.

6. In a phonograph, the combination with a recording device having a curved cutting edge with a diameter of not less than .025 of an inch, and a diaphragm of high sensitiveness, of a phonograph blank with which the recorder cooperates to form a spiral record, the pitch of which is proportional to the sensitiveness of the diaphragm, to allow for the formation without overlapping of waves or depressions of an abnormal amplitude, substantially as set forth.

7. As a new article of manufacture, a phonogram having a record cut spirally on its surface, said record being composed of a series of more or less connected gouges or waves having a greater width than depth and further characterized by freedom from overlapping, substantially as set forth.

8. As a new article of manufacture, a phonogram having a record cut spirally thereon with a pitch of not less

than seventy-five threads per linear inch, said record being formed of a series of more or less connected gouges or depressions bearing a definite relation in breadth to depth, substantially as set forth.

No. 2203Serial No. 731,156

Applicant.

Thomas A. Silvan

Address.

Title

Filed

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No. 652,457Issued June 26, 1900

ACTIONS.

1. Rejected Let. 25, 1899 16
2. Amended Dec 30 " 17
3. Revised January 13, 1900 18
4. Amended January 23, 1900 19
5. L. from O. Feb. 12, 1900 20
6. Amended Feb. 24, 1900 21
7. L. from O. March 13, 1900 22
8. L. to O. Apr. 11, 1900 23
9. Amat. Rept. Apr. 19, 1900 24
10. Amended May 9, 1900 25
10. Revised May 9, 1900 26
12. Amended May 10, 1900 27
13. Revised June 2, 1900 28
14. Final Let. from June 11, 1900 29
15. L. to O. June 27, 1900 30

Eg 5517

En 24 Ex 20 + 21

RICHARD N. DYER,

31. Nassau Street,

NEW YORK CITY.

✓
Frank W. Dyer -

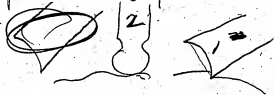
Rush this patent through
as fast as you can
I want it in office before
I give my testimony on
by phone 708

RECEIVED
JUN 25 1899
RICHARD M. DYE

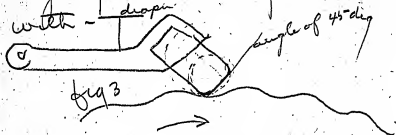
The object of this invention is to more accurately reproduce phonograph records ~~as compared to the present~~

The invention consists in the use of a reproducing point almost identical with the recording point now generally used excepting that the edge is rounded to prevent cutting the record when reproducing

The present method of recording ^{+ reproduction} now universally used is the Capped Circular recorder & the ball reproducer - figs. 1 & 2



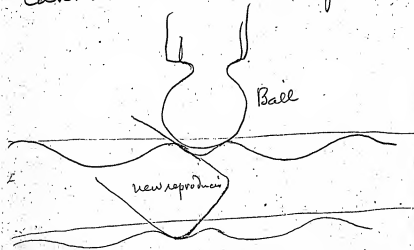
The improvement consists in using the recorder to reproduce - the ~~edge~~ ^{edge} being rounded slightly & the cupping dispensed with - ^{dropping}



By using a reproducer of this character the bearing takes place clear across the groove ~~of~~ or indentation made by the recorder ~~as~~ as is the case with the ball, and the total bearing surface is not very much less than with the ball but with this

(3)

form the bearing line is finer
 & can follow down into an
 indentation where the ball
 cannot as shown in fig 4



hence the overtones which are ~~not~~
~~the~~ formed by ~~the~~ indentations very
 close together the bottom of the
 same cannot be reached by
 the ball form whereas the new

(4)

form can follow to the bottom -
 The form of reproduction joint
 also permits very perfect reproduction
 on the standard cylinder
 now universally used without
 the necessity of increasing the
 surface velocity above the usual
 one ~~not~~

Syr

Claim the Cirocher reproduction
 point -

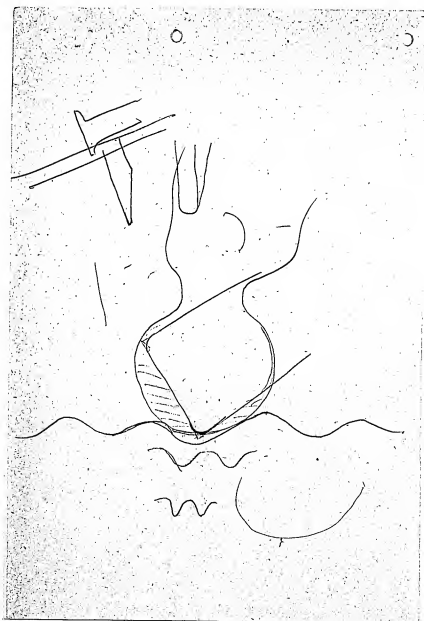
Claim in such a way that
 they can't evade it -
 it increases loudness & quality
 very much -

Sept 2 1899

JOE

$$\begin{array}{r}
 15 \\
 12 \\
 25-6 \\
 \hline
 21-6 \\
 \hline
 83-10
 \end{array}$$

$$\begin{array}{r}
 21-9 \\
 \hline
 48-6 \\
 \hline
 13-6
 \end{array}$$



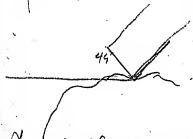
Dyer =

Sept 7-1899



The reproducer ^{works} just the same in either direction -

The angle should be ~~45~~ 45° to the record



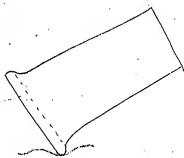
It can be more or less but this is the best angle

2

It is difficult to draw various methods of designing the point because there appears only one way of that is to make the ^{bearing} circle the same or approximately the same as that of the recorder no matter what that circle or shape is & then the material or form of the reproducer

3

cut is immaterial -



grain or cut of wood

JaE



Fig 1

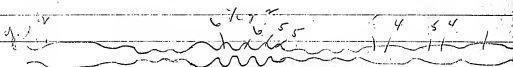


Fig 2

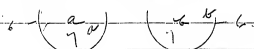


Fig 3

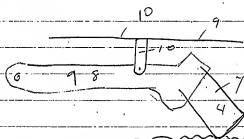


Fig 4

Fig 4

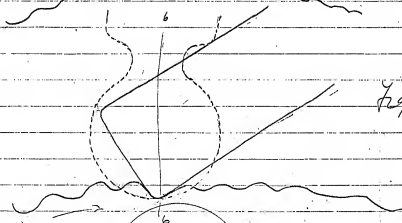


Fig 5

Fig 5

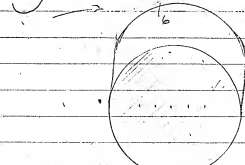


Fig 6

Fig 6

Fig 1

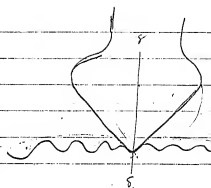


Fig 7



Fig 9

Fig 8

Fig 6

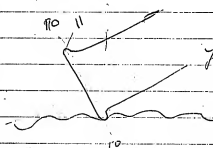


Fig 9

10



Fig 10

No. 2310Serial No. 734695

Applicant.

Thomas A. Edison

Address.

Title

Inpt. in Conveying Belts

Filed

October 25, 1899Examiner's Room No. 255

Assignee

Ass'gt Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1. Reported Nov 18-1899. 16.
2. Amended Nov 5, 1900. 17.
3. Reported Nov. 23, 1900. 18.
4. 19.
5. 20.
6. 21.
7. 22.
8. 23.
9. 24.
10. 25.
11. 26.
12. 27.
13. 28.
14. 29.
15. 30.

Abandoned

*Book at
Litchman
request
Nov 11/01*

RICHARD N. DYER,

31 Nassau Street,
NEW YORK CITY.

①

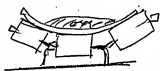
The object of this invention is to improve upon the present conveying belt and ~~increase~~ diminish the wear

The invention consists of the use with an ordinary flat conveying belt of ~~the~~ sides whereby the necessity of turning up the belt by pulleys or other devices is unnecessary -

Hence for conveying belts ~~to~~ using for conveying ores etc have not been used flat as the ore soon spreads over the whole width of the belt & then over the sides

2

This action being due to the action of the belt sagging between each pulley support & then straightening again - hence it is the practice to turn up the edge of the belt



by means of turn up or angle pulleys - These are expensive & more difficult to oil & keep dust out than the flat pulley. The ore is carried on only a portion of the belt, increasing

3
 the wear at that point. and
 the constant concaving of the
 belt together with the wear
 in the center causes the belt
 to fail + tear apart in the
 center long before any appreciable
 wear takes place over the
 principal part of the belt.
 By using ^{instead} ~~the~~ the use
 of angle pulleys are unnecessary
 the belt is strengthened +
 the wear is nearly the same
 if the entire width of the
 belt,

fig 1 shows the preferable
 method of constructing

4
 The belt X is the ordinary
 cotton or rubber belt.
 near the edges are secured
 ropes about $1\frac{1}{4}$ to $1\frac{1}{2}$ diameters
 These ropes are sewed to the
 belt by perforating the belt
 on each side of the rope
 with perforation sufficient
 to permit the ordinary belt
 to permit the ordinary belt
 being of rawhide to be
 passed through the convolutions
 of 1 inch are preferably
^{1/2} inch ~~at~~ apart, & where the
 lacing passes on the
 underside from one hole

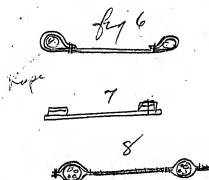
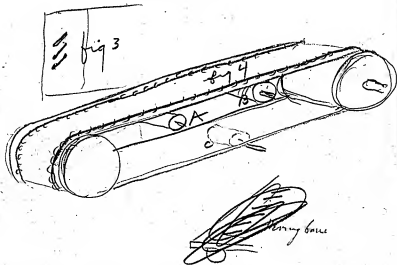
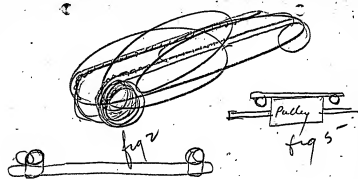
5-

to the other it is at an angle
 this in fig 3 = fig 2
 shows the end of the ropes
 fig 4 a conveying belt with
 idlers or supporting pulleys
 A B - These pulleys are the
 full width of the belt but
 the pulleys which support
 the under half of the belt
 c fig 4 are not the full
 width - being less in
 width than the space
 between the ropes on the
 belt,

6

figs 6 shows the rope with
 the belt wrapped over it & secured
 by sewing
 fig 7 shows a stripe of
 thick gutting riveted on
 while 8 shows the plys of
 belt split with the rope
 inserted between the plys
 & then sewed - as for instance
 a 6 ply belt is split -
 giving 3 ply to each side -

Claim Everything - J. E.
 Oct 19th 1899



LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 408,
SAMUEL O. EDMONDS,
REGISTRATION NO. 411,
FRANK L. DYER,
REGISTRATION NO. 410.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER THOMAS A. EDISON, a citizen of the
United States, residing and having his post office address
at Llewellyn Park, in the County of Essex and State of New
Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT
IN CONVEYING BELTS



SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS
AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L.
DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF
SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERA-
TIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL
BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN CONVEYING BELTS (Case No. 1015), of which the following is a description:

My invention relates to various new and useful improvements in conveying belts adapted for transporting material in bulk, such as iron ore, coal, grain, etc.

With the conveying belts as now made it is the practice to run the belts on supporting pulleys, and to concave the upper or carrying surface by the employment of angle-pulleys placed at suitable distances apart. The inclination of the angle-pulleys makes it very difficult to satisfactorily lubricate them and to insulate them from the dust, while the general arrangement is objectionable since practically the central portion only of the belt is subjected to wear, and in consequence the conveying belts heretofore used generally become entirely worn at their central portions while showing hardly any appreciable wear at their edges.

The object of my invention is to provide an improved conveying belt and supporting pulleys for the same, by which angle-pulleys are dispensed with, while in use the material will be distributed over substantially the entire surface of the belt so as to reduce the wear.

In order that the invention may be better understood, attention is directed to the accompanying drawings forming part of this specification, and in which figure 1 is

Nov 5 1900
a perspective view showing the preferred construction of belt and the manner of mounting the same; figure 2 a vertical section through figure 1; (and figures 3, 4 and 5 details of modifications.)

In all of the above views, corresponding parts are represented by the same numerals of reference.

Nov 5 1900
The belt 1 is made of the usual or ordinary material, preferably cotton or rubber, and is passed over the end pulleys 2, 2, which may be any desired distance apart. The belt 1 is provided, at or near each edge, with a confining rim or portion, by which the material in process of conveyance will be prevented from escaping. Preferably for this purpose I employ at each edge of the belt a rope 3 having a diameter of from one and one-quarter to one and one-half inches, and which is secured in place to the belt by means of a lacing 4 passed through perforations in the belt and forming loops over each rope, which loops are preferably about one-half inch apart. In this way the ropes 3 will materially strengthen the belt, while by securing them in place by means of lacings as explained, the ropes will be firmly and rigidly held in position and will practically constitute a part of the belt. When the supporting pulleys 2, 2 are a considerable distance apart, intermediate pulleys 5 are used to support the upper or carrying surface of the belt, said pulleys being mounted on horizontal axes and extending the entire width of the belt. The return portion of the belt is supported by pulleys 6, also mounted on horizontal axes but of less width than the belt, in order that the ropes 3, 3, or analogous portions, may clear the pulleys 6. (Instead of securing the ropes 3, 3 to the belt near the sides thereof as explained, each edge of the belt may be turned over upon a corresponding rope 3, as shown in figure 3, and secured in place by means of stitching, or

instead thereof the edges of the belt may be split, as shown in figure 5, and the rope 3 inserted in place between the plies, which are then sewed together, as shown in figure 5. While I prefer to use a rope, as explained, at each side of the belt, it will be understood that any other suitable material may be used for this purpose, and in figure 4 I show as an example of a further modification the employment of two strips 7, 7 of leather or any other suitable material secured one on top of the other and riveted or otherwise secured to the belt at each side thereof.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. As a new article of manufacture, a conveying belt having rim portions at each side thereof, substantially as set forth.

2. In a conveying apparatus, the combination with the supporting pulleys mounted on horizontal axes, of a conveying belt carried by said supporting pulleys, and rim portions for said belt at each side thereof, substantially as set forth.

3. In a conveying apparatus, the combination with the supporting pulleys mounted on horizontal axes, of a conveying belt carried by said supporting pulleys, rim portions for said belt at each side thereof, intermediate supporting pulleys for the conveying portion of the belt of a width equal to that of the belt, and supporting pulleys for the return portion of the belt of a width less than the distance between the rim portions thereof, substantially as set forth.

4. As a new article of manufacture, a conveying belt having a rope secured to its outer face near each side thereof, substantially as set forth.

3. As a new article of manufacture, a conveying belt having a rope secured to its outer face near each side thereof by means of lacings, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 20th DAY OF October 1889

Thomas A. Edison

Witnesses:

1. J. F. Raudolph
2. Edwin E. Agert

Oath.

State of New Jersey } ss.:
County of Essex

THOMAS A. EDISON

, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;

THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN CONVEYING BELTS

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

Thomas A. Edison

SWORN TO AND SUBSCRIBED BEFORE ME THIS 20th DAY OF October 1889

(SEAL)

J. F. Raudolph
NOTARY PUBLIC. for
New Jersey

Handmade

Case 2310
1 Sheet

Fig. 1

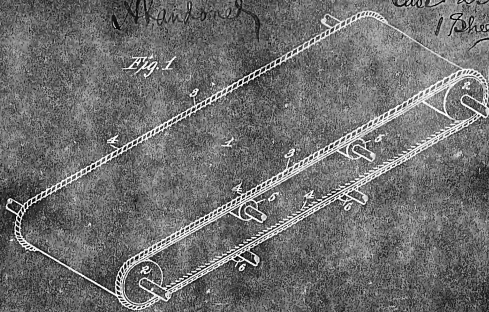


Fig. 2

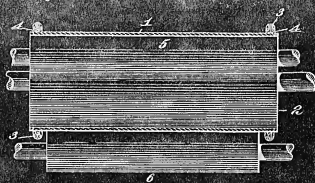


Fig. 3



Fig. 4



Fig. 5



Witnesses:

James F. Coleman
Geo R Taylor

Inventor

Thomas A. Edison
Wm H. Edwards
Att'ys.

2-020.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C., Oct 25, 1899

{ Series of 1880.

No. 734695

SIR:

I have to acknowledge the receipt of the petition, specification, oath, and
drawing of your alleged improvement in

Conveying - Belt

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be
for examination in its order



You will be duly advised of the examination.

Very respectfully,

Copy will be taken up for
examination in about one month.

J. A. Edison

C. A. Duell
Commissioner of Patents.

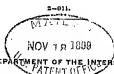
7. Dyer Edmonds Dyer
Nylbity

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

25—If payment is made by check or draft, the receipt granted is subject to the collection of the same.

Room 1255.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."



All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
PATENT OFFICE,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., Nov. 18, 1899.

T. A. Edison,
Care Dyer, Edmonds & Dyer,
31 Nassau St.,
New York, City, N. Y.



Please find below a communication from the EXAMINER in charge of your application.

For Conveying Belt, filed Oct. 25, 1899, #734,695.

C. H. Duell
Commissioner of Patents.

This application has been examined.

The claims are all rejected on Hardy, 315,141, April 7,
1885, (Driers, Endless Carriers;) Holland, 416,704, Dec. 3, 1889.
(Ore & Coal Washers;) Rowers, 575,142, Jan. 12, 1897, (same class);
Dodge, 37,615, Feb. 10, 1863, (Conveyers, Endless, Belt;) Brennan,
396,136, Jan. 15, 1889, (same class); Ridgway, 632,750, Sept. 12,
1899, (same class,) or Braithwaite, 435,389, Sept. 1890, (Lawn
Mowers,) Grass Catchers.)

The state of the art as above disclosed would seem to
preclude the allowance of any claim on the subject-matter presented

THOMAS A. EDISON :
:
CONVEYING BELT :
: ROOM NO. 258.
FILED OCTOBER 25, 1899 :
:
SERIAL NO. 734,695 :

HON. COMMISSIONER OF PATENTS,

S I R :

We amend the above-entitled application as follows:-

Cancel figures 3, 4 and 5 of the drawing.

Page 2, lines 3 and 4, erase "and figures 3, 4 and 5 details of modifications".

Same page, beginning with "Instead", fourth line with bottom, erase through "thereof", line 10, page 3.

Cancel claims 1 and 2, and renumber the remaining claims.

The first claim covers applicant's suggestion of supporting a rimmed belt upon driving rollers which extend the width of the belt and upon intermediate rollers which are arranged between the rim portions. The second and third claims cover applicant's improved conveying belt provided with a rope to form rim portions secured on the outer face near each side. We submit that these claims are allowable.

In the patent to Hardy, the belt is provided at each edge with a rope solely for strengthening purposes, as is common in many arts, for instance in the manufacture of clothing. This patent does not show the shortened intermediate rollers.

The patent to Braithwaite shows a belt with a rope on the under side, which cannot, of course, form a rim, and this patent also fails to disclose the arrangement of sup-

porting and intermediate rollers claimed.

The patent to Ridgway shows a rubber belt lapped over upon a rope at either side, and not a belt provided with a rope on its outer face. This patent also fails to disclose the claimed arrangement of supporting and intermediate ropes.

The patent to Brennan, Jr., shows a conveyor formed of ropes with separate links strung upon them, and not a belt having a rope at each side on its outer face. The driving rollers of this patent extend the full width of the belt, and there are no intermediate rollers, as claimed.

The patent to Dodge fails to disclose the intermediate rollers and shows a belt having elastic rims, and not one with a rope on its outer face at each side.

The patent to Bowers shows no supporting or intermediate rollers, but discloses simply a rimmed belt, the edges of the rims being strengthened with ropes.

The patent to Holland shows a conveyor made of slats carried on top of supporting ropes, which is entirely different from the construction claimed.

It is hoped the case as now presented may, therefore, be allowed.

Respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, November 5, 1900.

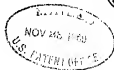
Room No. 255,
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-246.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., Nov. 23, 1900.



In every application for a patent filed subsequent to December 31, 1897, responsive action must be made by the
inventor within one year after the date of filing of the application or the case will become abandoned.

T. A. Edison,

Care Dyer, Edmonds & Dyer,

31 Nassau St.,

New York City.

Please find below a communication from the EXAMINER in charge of your application.

for Conveying-Belt, filed Oct. 25, 1899, Ser. No. 734,695.

C. H. Duell
Commissioner of Patents.

Claim 1 is rejected on Hack, 323,323, July 28, 1885, (Conveyers,
Belt,) Fig. 4, or St. Clair, 443,488, Dec. 23, 1890, (Conveyers, End-
less.)

Claims 2 and 3 are rejected on Hardy, of record. Nothing is said
in these two claims as to the purpose of the rope. However, in view
of the other references of record, the use of a rope as a substitute of
any other kind of a flange would not be patentable over the references.

The claims are all rejected.

Case No. R-1015,

Dropped,

Filed October 25, 1899,

Improvements in Conveying Belts.

C l a i m s .

1. As a new article of manufacture, a conveying belt having rim portions at each side thereof, substantially as set forth.

2. In a conveying apparatus, the combination with the supporting pulleys mounted on horizontal axes, of a conveying belt carried by said supporting pulleys, and rim portions for said belt at each side thereof, substantially as set forth.

3. In a conveying apparatus, the combination with the supporting pulleys mounted on horizontal axes, of a conveying belt carried by said supporting pulleys, rim portions for said belt at each side thereof, intermediate supporting pulleys for the conveying portion of the belt of a width equal to that of the belt, and supporting pulleys for the return portion of the belt of a width less than the distance between the rim portions thereof, substantially as set forth.

4. As a new article of manufacture, a conveying belt having a rope secured to its outer face near each side thereof, substantially as set forth.

5. As a new article of manufacture, a conveying belt having a rope secured to its outer face near each side thereof by means of lacing, substantially as set forth.

No. 2316

E 1017

Serial No. 736360

Applicant.

Thomas A. Edison

Address.

Title Process and Apparatus for drying and reclaiming ink and other matters in bulk.Filed November 9, 1899.Examiner's Room No. 261
243

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

1. Reported Dec. 19, 1899.2. Amended Dec. 30, 1899.3. Reported Jan. 29, 1900.4. Amended Feb. 21, 1900.5. Reported Feb. 21, 1900.

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

Handwritten notes:
 Look for the history
 of April 16, 1900
 & connect the same
 as a
 reference -

RICHARD N. DYER,

31 Nassau Street,
NEW YORK CITY.

The object of this invention is to
economically & effectively dry ore
& other crushed material.



The invention consists in crushing
the wet or damp material passing
it through a dryer thence over
screens to remove the sizes desired
then rebrushing the larger sizes
~~and~~ mixing them with
the fresh wet ore & returning
the whole to the dryer.

By continuously passing what
is called in ore crushing
plants "Returns" together
with the fresh ore coming in
the mill - The hot dry returns

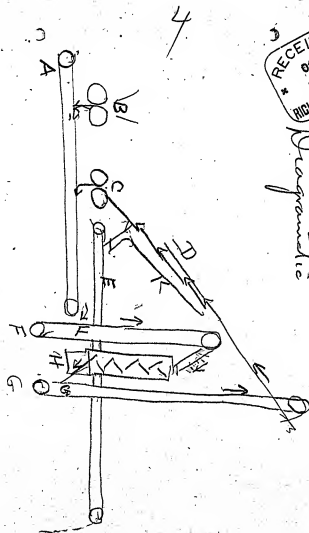
from the screens mixing with
the wet ore intimately produces
rapidly & economically a
perfect drying and renders
the use of a large dryer
& high temperature unnecessary.

Yours -

Dyer

This has been in operation
in Little Mill at N. G. Zins
Co for $1\frac{1}{2}$ years, I had
forgotten it - its
an important improvement
in my plants. - E

1 3 1
 A is a conveying belt, B a
 pair rolls or roller Crushing
 machine A delivers coal
 or ore from B to Elevator F
 This delivers to Dryer H,
 from bottom Dryer H goes
 into Elevator G delivers in
 Chute & thence to Screen
 D over two Coarses to go
 thro screens goes to re-crush
 C - Right size ore goes
 to Conveying belt E



Diagrams

oct 22 1899
 JCH

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 424,
SAMUEL O. EDMONDS,
REGISTRATION NO. 41,
FRANK L. DYER,
REGISTRATION NO. 222.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER THOMAS A. EDISON, a citizen of the United States, residing and having his post office address at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE PROCESS AND APPARATUS FOR DRYING AND SCORCHING ORNS AND OTHER MATERIAL IN BULK

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful PROCESS AND APPARATUS FOR DRYING AND SCREENING ORES AND OTHER MATERIAL IN BULK (Case No. 1017), of which the following is a specification:-

My invention relates to an improved process by which wet or damp ore and other material in bulk may be effectively and economically dried and screened, (and to an improved apparatus for carrying the process into effect.) My process makes it possible for me to employ a relatively small dryer and to utilize comparatively low temperatures for effecting the drying.

My process consists in crushing the wet or damp ore or other bulk material, in passing the crushed material through a dryer by which it is dried, in then subjecting the dried, crushed material to a screening operation by which particles of sufficient fineness will be separated from the material and conducted to the point of use, in recrushing the tailings of the screen or screens, which tailings are known in the art as "returns", in mixing the re-crushed, dry, hot returns with freshly crushed, wet material, and in passing the mixture again through the dryer, and so on. By adding the re-crushed, dried, hot returns to the freshly crushed, wet or damp material, a part of the moisture will be driven out of the latter, and the proportion of moisture in the material passing through the dryer will be reduced, so that a relatively small dryer may be employed,

utilizing comparatively low temperatures for effecting the drying.

(My improved apparatus comprises two sets of crushing rolls, one set for crushing the wet or damp material in bulk and the other set for recrushing the dry, hot returns; a dryer to which, after the apparatus is in operation, the mixture of returns and freshly crushed, wet or damp material is passed; a screening device for screening the material after it has passed through the dryer; and proper conveyors and elevators for automatically directing the streams of material through the several devices constituting the apparatus.)

In order that my invention may be better understood, attention is directed to the accompanying drawing, showing the ^{an} improved apparatus in diagram, ^{for carrying the process in effect.}

1 represents a pair of crushing rolls or other crushing apparatus, provided with a hopper 2, into which the wet or damp ore or other material in bulk is delivered. This crushing apparatus is of any suitable type. 3 is a conveyor belt, located beneath the crushing apparatus 1 and receiving the crushed material therefrom. 4 is an elevator, into the boot of which the crushed material from the conveyor 3 is deposited. This elevator carries the crushed material upward and deposits it in the hopper 5 of a dryer 6 of any suitable type. Preferably the dryer 6 is supplied with hot air from a furnace 7 and is provided on its interior with the inclined baffle-plates 8, by which the material will be caused to pass through the dryer in the shape of a plurality of flat, zig-zag streams. The crushed, dried material from the dryer 6 is deposited in the boot 9 of an elevator 10, and is conveyed by said elevator to a screening apparatus 11 of any suitable type. Preferably this screen-

ing apparatus comprises a plurality of screen sections 12, 13, and a series of checking surfaces 13, by means of which the material after it has passed over one screen section will be brought to rest before passing over the screen section next below. By thus passing the material more slowly over the screen sections, the screening operation is facilitated.

The fine material from the screens falls upon an incline 14 and is deposited on a conveyor 15, by which it is carried to the point of use. The tailings of the screens, which are in the form of dry, hot returns, are passed through a recrushing apparatus 16 of any suitable type and by which such tailings will be recrushed. The recrushed material from the recrushing apparatus 16 is deposited on the conveyor 3, so as to be intimately associated with the wet or damp material from the crushing apparatus 1.

The operation will be as follows:- The wet or damp ore or other material in bulk is supplied to the hopper 2 in the desired quantity and is crushed between the crushing rolls 1 or other crushing apparatus. The wet or damp, crushed material being deposited on the conveyor 3 will be elevated by the elevator 4 and pass through the dryer 6, by which it will be dried. From the dryer 6, the crushed, dry material will be elevated by the elevator 10 and pass through the screening apparatus 11. Sufficiently fine material will be carried off by the conveyor 15, but the coarse tailings or returns will be passed through the recrushing apparatus 16 and again deposited upon the conveyor 3. By thus adding the recrushed, dry, hot returns to the wet or damp material on the conveyor 3, a part of the moisture carried by the wet or damp material will be driven out and the proportion of moisture contained in the mixture passing

through the dryer 6 will be considerably reduced, so that a relatively small dryer may be used, utilizing comparatively low temperatures.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:-

1. The process of drying and screening wet or damp material in bulk, which consists in crushing the wet or damp material, in passing the crushed material through a dryer, in screening the dried, crushed material, in re-crushing the dry, hot tailings or returns from the screening apparatus, and in mixing the re-crushed, dry, hot returns with the crushed, wet or damp material, substantially as set forth.

2. The process of drying and screening wet or damp material in bulk, which consists in crushing the wet or damp material, in passing the crushed material through a dryer, in screening the dried, crushed material, in re-crushing the dry, hot tailings or returns from the screening apparatus, in mixing the re-crushed, dry, hot returns with the crushed, wet or damp material, and in passing the mixture again through the drying apparatus, substantially as set forth.

3. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus for screening the dried, crushed material from the dryer, and means for re-crushing the tailings of said screening apparatus and for mixing the re-crushed tailings with the crushed, wet or damp material, substantially as set forth.

4. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp mater-

ial is directed, a screening apparatus to which the dried, crushed material from the dryer is directed, a recrushing apparatus for recrushing the tailings of the screening apparatus, and means for mixing the recrushed, dry tailings with the crushed, wet or damp material, substantially as set forth.

5. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus to which the dried, crushed material from the dryer is directed, a recrushing apparatus for recrushing the tailings of the screening apparatus, and a conveyor located beneath the crushing and recrushing apparatus and onto which the crushed and recrushed material is deposited, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 28th DAY OF October 1889

Thomas A. Edison

Witnesses:

1. J. F. Randolph
2. J. C. Donald

Oath.

State of New Jersey } ss.:
County of Essex

THOMAS A. EDISON

, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;

THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE PROCESS AND APPARATUS FOR DRYING AND SCREENING ORES
AND OTHER MATERIAL IN BULK

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
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PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
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MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

Thomas A. Edison

SWORN TO AND SUBSCRIBED BEFORE ME THIS 28 DAY OF October 1889

J. F. Randolph
NOTARY PUBLIC.

New Jersey

(SEAL)

2-020.

If communication should be addressed to
"The Commissioner of Patents,
Washington, D. C."

{ Series of 1880.

No. 734350

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C., Nov 9 1899



Sir:

I have to acknowledge the receipt of the petition, specification, oath, and drawing of your alleged improvement in

Process + Apparatus for Drying + Screening Ores + in Bulk

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up for examination in its order

You will be duly advised of the examination.

Very respectfully,

Case will be taken up for examination in about six weeks.

C. H. Duell

Commissioner of Patents.

J. A. Edison

70 Dyer Edmonds + Dyer

31 Nassau St

NY City

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

When payment is made by check or draft, the credit granted is subject to the collection of the same.

Room N843...
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

P-571.

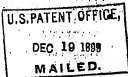
DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C.

All communications regarding this
application should give the serial number,
date of filing, and the name of the
inventor.



Dec. 20, 1899

Thomas A. Edison,
Care Dyer, Edmonds & Dyer,
31 Nassau Street,
New York City, New York.



Please find below a communication from the EXAMINER in charge of your application.
#736,360, filed May. 9, 1899, for Process and Apparatus for
Drying and Screening Ores, &c., in Bulk.

C. H. Duell
Commissioner of Patents.

This case, having been taken up for examination, is found
to embrace two separate and independent inventions - one, a
process, covered in claims 1 and 2, and the other, an apparatus,
covered in claims 3, 4 and 5. In accordance with Rule 41, division
is required.

THOMAS A. EDISON

PROCESS AND APPARATUS FOR DRYING
AND SOFTENING GUMS & CO.
IN BULK

ROOM NO. 243.

SERIAL NO. 736,350

FILED NOVEMBER 9, 1899

HON. COMMISSIONER OF PATENTS,

S I R :

Please amend as follows:-

Erase the words "AND APPARATUS" in the
title of the invention.

Page 1, line 5, erase the words "AND APPARATUS".
Same page, lines 10 and 11, erase the words ", and to an
improved apparatus for carrying the process into effect".

Page 2, beginning with "My", line 3, erase through
"apparatus", lines 11 and 12. Same page, line 15, erase
"the improved", and substitute -----an----- Same line,
after "diagram" insert -----for carrying the process into
effect-----.

Insert at the end of the specification:--

-----I do not claim herein the improved drying apparatus
for carrying the process into effect, since such apparatus
is made the subject of a separate application for patent.---

Cancel claims 3, 4 and 5.

Action on the merits is now respectfully requested.

Respectfully,

Attorneys for Edison.

New York, December 30, 1899.

Room No. 261.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-071.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., Jan. 29, 1900.

Thomas A. Edison,
C/o Dyer, Edmonds & Dyer,
31 Nassau St.,
New York, N. Y.



Please find below a communication from the **EXAMINER** in charge of your application.

Ser No 736,350, Filed Nov. 9, 1899, for "Process of Drying and
Screening."

C. H. Duell
Commissioner of Patents.

This application, as amended, has been taken up for examina-
tion.

The claims are rejected upon the patent to Cummer, No. 634,199
Oct. 3, 1899, in Driers, Cyl., Int., Rot., Inclined, and No. 634,
200, Oct. 3, 1899, in Driers -Processes.

Enter in Case 634,199

THOMAS A. EDISON

PROCESS OF DRYING AND SCREENING

FILED NOVEMBER 9, 1899

SERIAL NO. 736,350

ROOM NO. 261.

HONORABLE COMMISSIONER OF PATENTS,

S I R :-

Reconsideration of the claims is respectfully requested.

With applicant's invention the material is first crushed, then passed through a dryer, and finally screened, the screenings passing off to the point of use and the tailings being recrushed and mixed with fresh quantities of crushed wet or damp material. Both of the patents to Cummer of record relate particularly to apparatus and methods connected with the handling of garbage, and that apparatus is of such a character as to be practically limited only to the handling of comparatively soft and garbagematerial. With the Cummer patents the garbage is taken in its original form, passed through a dryer and screened, the screenings passing off for use, the tailings being disintegrated, and being finally again introduced into the dryer with fresh quantities of undried garbage.

The differences between the Cummer patents and applicant's invention may be thus stated:

First: In applicant's invention the material is first crushed, and the tailings from the screen are recrushed and mixed with the crushed wet or moist material. In the Cummer patents there is no equivalent of applicant's first step of crushing, since the garbage is introduced into the dryer in its original state.

Second: With applicant's process the recrushed dry hot returns from the screen are mixed with the crushed wet

or damp material before being repassed through the drying apparatus. In the Cummer patents the disintegrating screenings are only added to the fresh material at the dryer, and there will in consequence be a very imperfect mixture of the two.

Very respectfully,

Attorneys for Edison.

New York, February 21, 1900.

2-611.

Room No. 261,
If communication should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., March 6, 1900.

T. A. Edison,
C/o Dyer, Edmonds & Dyer,
31 Nassau Street,
New York, N. Y.



Please find below a communication from the EXAMINER in charge of your application.

Re No 736,350, Filed Nov. 9, 1899, for "Process of Drying Ores."

C. H. Duell
Commissioner of Patents.

This application has been again examined, and as no reason is seen for modifying the previous action, the claims are finally rejected upon the references of record. The apparatus shown in the references is described as intended for use in disintegrating and drying lignite and gypsum as well as garbage.

WM. H. SHELLENSHINE
PRESIDENT.
W. S. MALLOY
VICE-PRES.
W. S. PULLIN
TREASURER.
THERON J. CRANE
SECRETARY.
THOMAS A. EDISON
GEN'L. MANAGER.

The Edison Portland Cement Co.

GENERAL OFFICE:
GIRARD BUILDING, PHILADELPHIA, PA.

ORANGE TELEPHONE, "311 ORANGE."

Edison Laboratory, Orange, N. J.,

April 16th, 1900

Messrs. Dyer, Edmonds & Dyer,
31 Nassau Street,
New York City.



Gentlemen:--

Replying again to yours of February 21st, in reference to application Edison #1017, and Edison #1024, beg to state that we have further investigated the matter and find that Mr. Edison gave the New Jersey Zinc Co. instructions to arrange their plant so a portion of the dry material should be returned and mixed with the wet material, and go through the Dryer with it, but his instructions were not carried out, and the material only went through the Dryer once.

Yours very truly,

*Heard & answered
March 17. Regarding
Pats. to Comm. acts*

*140. 11/10/00
Malloy*

Case No. E-1017,

Filed Nov. 9, 1899. Dropped,

Process for Drying and Screening Ores and other Material
in Bulk.

C l a i m s.

1. The process of drying and screening wet or damp material in bulk, which consists in crushing the wet or damp material, in passing the crushed material through a dryer, in screening the dried, crushed material, in re-crushing the dry hot tailings or returns from the screening apparatus, and in mixing the recrushed, dry, hot returns with the crushed, wet or damp material, substantially as set forth.

2. The process of drying and screening wet or damp material in bulk, which consists in crushing the wet or damp material, in passing the crushed material through a dryer, in screening the dried, crushed material, in re-crushing the dry, hot tailings or returns from the screening apparatus, in mixing the recrushed, dry, hot returns with the crushed, wet or damp material, and in passing the mixture again through the drying apparatus, substantially as set forth.

3. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus for screening the dried, crushed material from the dryer, and means for re-crushing the tailings of said screening apparatus and for mixing the recrushed tailings with the crushed, wet or damp material, substantially as set forth.

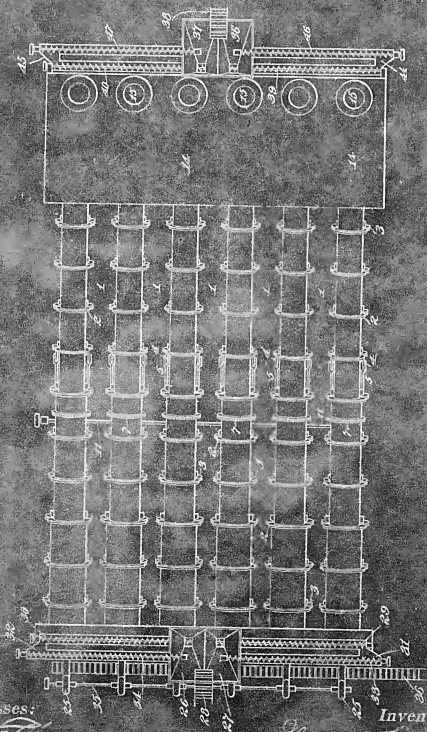
4. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus to which the dried, crushed material from the dryer is directed, a recrushing apparatus for recrushing the tailings of the screening apparatus, and means for mixing the recrushed, dry tailings with the crushed, wet or damp material, substantially as set forth.

5. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus to which the dried, crushed material from the dryer is directed, a recrushing apparatus for recrushing the tailings of the screening apparatus, and a conveyor located beneath the crushing and recrushing apparatus and onto which the crushed and recrushed material is deposited, substantially as set forth.

Dropped

*Case 2277
Exhibit
Sheet 1*

Fig. 1



Witnesses:

*James F. Coleman
Archibald S. Reed*

Inventor

*Thomas A. Glavin
by J. E. Edwards*

Att'ys.

Dropped

*Case 2277
Edison
Patent*



Fig. 2

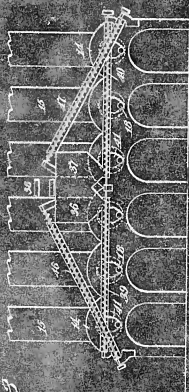


Fig. 3

Witnesses:

*Joe F. Coleman
Archibald P. Hill*

Inventor

*Thomas A. Edison
by *Lyon Edmunds* att'y*

Att'y's.

Dropped

Case 2278
4 sheets
sheet 3

Fig. 4

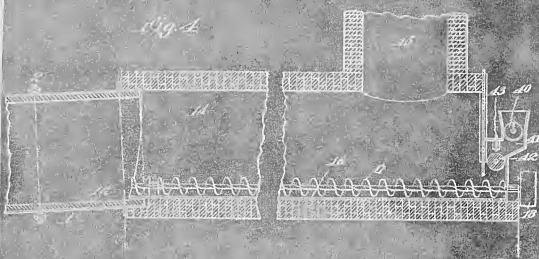
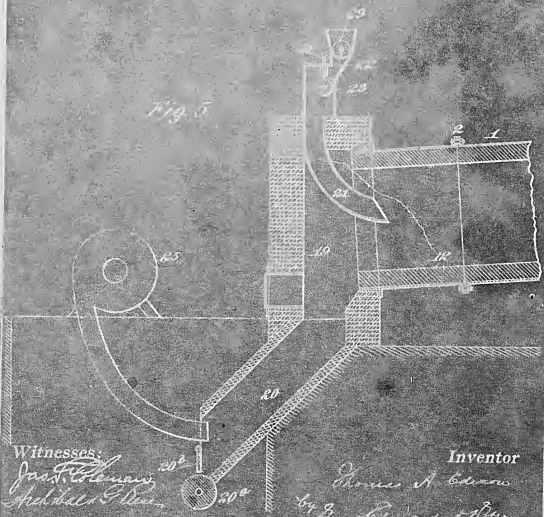


Fig. 5



Witnesses:

Jas. F. Coleman
Archibald S. Rice

Inventor

James A. Brown

by J. A. Brown & Co.

Att'ys.

Dropped

*Case 2277
4th June
Sheet 4*

Fig 6

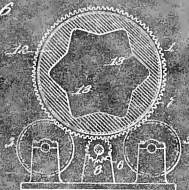


Fig 7

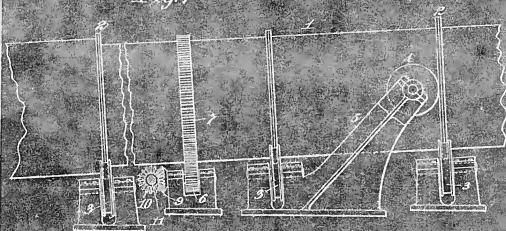
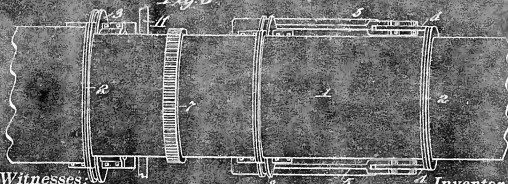


Fig 8



Witnesses:

*Jas. V. Coleman
Witness*

Inventor

Thomas A. Edison

By R. P. Coleman & Co.

Att'ys.

No. 23336, 1022Serial No. 523

Applicant,

Thomas A. Edison

Address.

Title

Inpt. in Process of Magnetic Separation

Filed

January 9, 1900Examiner's Room No. 243

Assignee

Ass'gt Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

- | | | |
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| 1 | <u>Received Feb. 8, 1900</u> | 16 |
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| 14 | | 29 |
| 15 | | 30 |
- Abandoned*
- Filed*
- Noted - Prob*
- G. L. P.*

RICHARD N. DYER,

31 Nassau Street,
NEW YORK CITY.

①

Edison Dec 1899

The object of this invention is to separate magnetic material from nonmagnetic materials



The invention consists in a ~~new~~ form of magnetic separator which by adjustment can be made to separate equally as well very magnetic material and also material having ~~some~~ extremely weak magnetic properties -

Fig. 1 shows ^{one} ~~the~~ form of magnet employed in the separator.
A the driving belt B, B' bearings
X the shaft G the core of magnet
F E the poles of the magnet which serve to form a cylinder W the wire -

2

c. c. the connecting ring insulated from the iron shaft & having smooth contact rings d d' contact brushes W is the wire which is so proportioned to the run that the latter can be magnetized nearly to saturation - fig 2

shows how the polar extensions are put on - The wire is previously wound as a bobbin & placed over the non core of the heads screwed together -

3

after the magnet is assembled - a very thin strip of sheet brass is made to entirely inclose the whole of the magnetic cylinder - This brass sheet prevents the belt which runs over the magnetic pulley from being drawn inwards between the poles when it is loaded with magnetic materials -

4

fig 3 shows the separator arranged for operation I prefer to use more than one separator so that the Concentrate can be run two or more times through the same operation -

The operation is as follows The M^1 M^2 M^3 are the magnets of the 3 operators - In the case of very magnetic material - the speed

5. of the belt is very great
I prefer to have the belt
travel from 6 to 800 ft
or more per minute.
The Hopper B with roller
feed serves to feed the
magnetic material evenly
over the belt to nearly
the full width of
the face of the magnetic
pulley = the magnetism
of the latter is sufficient
to prevent ~~the~~ the magnetic
particles from being

6. thrown off the pulley by
centrifugal force while
the nonmagnetic particles
entangled in the magnetic
particles coalesce together
and are forcibly drawn out
by the powerful centrifugal
force acting upon them -
the speed of the belt is
adjusted that this centrifugal
power is great enough
to overcome the clogging
together of the magnetic
particles which tends to
prevent their being thrown

7 off - In ~~these~~ separators
of this general character
the disadvantage has not
been taken of the centrifugal
force hence the speeds
have been slow & the
quality of the magnetic
product has been poor.
In practice not enough
magnetism is generated
to carry all the magnetic
particles completely around
the Drum - then the action
of the under part of
the belt strips them away
& they fall into the hopper

8 below & are fed onto the belt
of the next separator ~~the~~
The object of the other 2
separators is to insure the
separation of every particle
of free non magnetic
matter a few particles
escaping the first machine
when the output is increased
by feeding a thick stream.
If the material is ~~poor~~ very
weak in magnetism the
non magnetic particles
cannot be separated by
centrifugal action tho

9

Speed of the belt is reduced to 20 or 30 feet per minute and the dividing boards arranged as in fig 4 - The nonmagnetic particles drop vertically -

The ore in this case is not fed over the entire width of the belt covering the magnetic pulley but only over that portion of the belt which covers the gap between the poles

10

When the material is extremely weak magnetically like garnets specular iron ore etc - I prefer to construct the magnetic drum like fig 5 -

A A' are wooden extensions of the polar pieces - over the polar ~~extension~~ ^{extension} at the gap the gap is covered with thin sheet brass. The polar piece + wood serves as a narrow pulley

11

over which a thin
Conveying belt runs; this
belt is preferably of an
uneven surface like
heavy Duck Canvas
to prevent the materials
being drawn to the edges
of the rollers & thus clog.
The bottom of wire is first
wound separately &
then ~~put~~ put over core &
palm Ends secured as
The palm Ends as they
approach the Core are made

12

thicker so the iron will not
become saturated except at
the palm ends.
The belt speed should be
from 20 to 50 feet per minute
& the feed the same with
as the palm edges X X
By ~~first running the~~
~~wire alone and the first~~
by triplicate separators
& re running up the
concentrate two or more
times, a very perfect

13

Concentrate can be obtained from materials showing no magnetism at all with even quite strong magnets -

The output of the machines can be increased by adding more magnets & increasing the fields as the imperfect separations of one separator with a heavy load are subsequently corrected

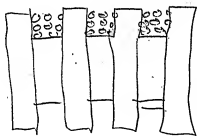
14

If it is desired to still further increase the amount passing through the machines, the tailings can be allowed to be ~~rather~~ somewhat richer in magnetic material by moving the dividing board & these tailings run through another set or gang of separators.

15

The Magnetic drum - with poles
Extending over face to form
aperture with wire inside -

Note -



This kind of a separator has
been used but the defect
is that ~~not so much~~ there is
not near enough room

16

in grooves to get ~~enough~~
twice enough to bring
the magnet anywhere
near saturation hence
its a very weak affair -
Whereas in the drum as I
show the space for wire
is so great that the
polar ends can be saturated
Especially in the 2nd
form shown -

17 also claim - the process of separating magnetic material by counteracting centrifugal force by magnetism on magnetic material & causing the pull of centrifugal force on non magnetic particles to reach a point sufficient to disintangle from & overcome the magnetic clotted clog of the non magnetic magnetic

18 = for instance if the magnetism of the magnet is kept strong & the belt speed slow scarcely any any of the non mag particles will come out they are entangled in the magnetic material & held on the drum if the speed is increased the centrifugal pull ~~will~~ will be increased & many not too strongly held will be thrown off - There is a point where

19

Nearly all will be
 thrown off the centrifugal
 force far exceeding any
 the force of the magnet.
 Clogging - but this makes
 the belt speed a little
 too great hence is used
 more than one separator.

This is a new idea in
 operation & it works
~~very~~ perfect -

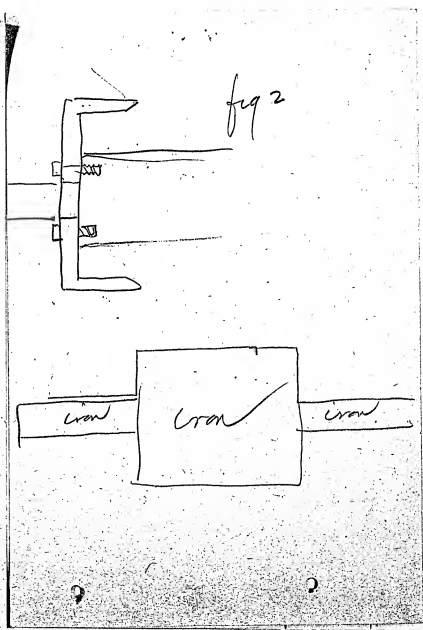
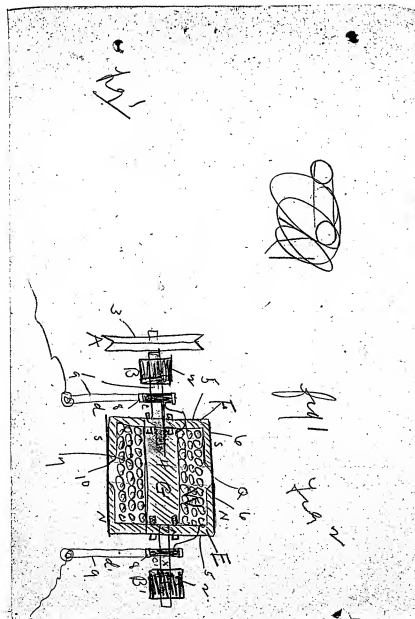
20

Reclaim the 2nd form of
 magnet in details &
 generally this magnet
 gives the limit to magnetism.
 It also works fine -

Claim the gang separator

Claim gang separator
 for rerunning Concentrat
 & gang for rerunning
 tails etc = The
 roughed belt -

Dec 8/99 Edison



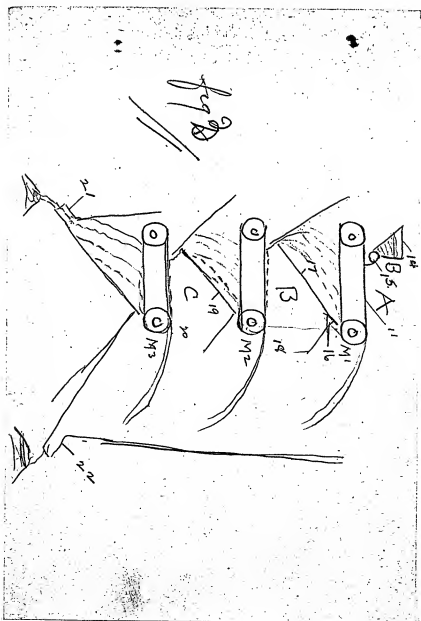


fig 9

LAW OFFICES
DYER, EDMONDS & DYER,
SPECIALTY:
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 406.
SAMUEL O. EDMONDS,
REGISTRATION NO. 411.
FRANK L. DYER,
REGISTRATION NO. 420.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER, THOMAS A. EDISON, a citizen of the United States, residing and having his post office address at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT IN
PROCESS OF MAGNETIC SEPARATION

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

THOMAS A. EDISON

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN PROCESS OF MAGNETIC SEPARATION (case No. 1022), of which the following is a description:

In an application filed on even date herewith I describe certain improvements in magnetic separators comprising a rotating magnet, the poles of which are arranged adjacent to each other to form a relatively narrow gap between them, the whole constituting a pulley around which is passed an endless belt, and to the said belt is fed the mixed magnetic and non-magnetic particles. In my said application I describe specifically how the apparatus is intended to work in connection with materials which are extremely weak magnetically, such as garnets and specular iron ore, the magnetic and non-magnetic particles being fed to the belt substantially in line with the gap between the polar faces, whereby the magnetic particles will be tenaciously attracted to the belt and will be carried down around the magnet and thence away from the vertical diameter, where they drop off, while the non-magnetic particles immediately drop off of the belt as it approaches and recedes from a vertical direction.

My present invention relates to an improved process by which a magnetic separator of the general type described in my said application can be very effectively utilized for the separation and concentration of particles which, compared to garnets and specular iron ore, are relatively magnetic, such as magnetite, and I have modified said apparatus in specific respects to fit it more perfectly to the carry-

ing on of the improved process.

One of the difficulties in magnetic separation is that non-magnetic particles become entangled with the magnetic particles and are carried through the apparatus, and a common expedient at the present time in use in the art is to subject the magnetic and non-magnetic particles to more or less agitation during the separate operations so as to prevent the entrainment or entanglement of the non-magnetic particles with the magnetic particles. I find that with an apparatus of the general type referred to, when operated at a sufficiently high speed as to result in the generation of considerable centrifugal force, the non-magnetic particles will not only be thrown off of the belt as it passes around the magnet, but such particles will be actually disentangled from the magnetic particles, due to the effect of the magnetic force, and thrown off so as to be effectively separated. When an apparatus of this general type is used with materials which are extremely weak magnetically, it is desirable, as I describe in my said application, that the materials should be fed to the belt only in lines substantially coincident with the gap between the polar faces in order that such materials may be subjected to lines of intense magnetic force. When, however, my improved process is carried out, utilizing centrifugal force to facilitate the separating operation, it is not necessary to get such a concentrated magnetic field, and hence it becomes possible to modify the apparatus to the extent of using very much larger polar faces, which as a whole may be nearly magnetically saturated.

An apparatus intended for the carrying on of my improved process may therefore be formed of a core to which power is applied, two disks carried by the ends of said core, and overhanging rims carried by said disks and enclos-

ing the magnetizing coil, the whole magnet being therefore essentially cylindrical in form and carrying the feed belt for the entire width of the polar faces. Since the ampere turns of the coil will be so proportioned to the mass of the metal in the magnet as to result in the polar faces being nearly magnetically saturated, it becomes possible, with an apparatus utilizing my present process, to feed to the belt material throughout substantially the entire width of the belt, whereby the rapidity of operation of the apparatus will be very greatly increased in addition to the increase which results from the higher speed at which the belt is driven.

In order that the invention may be better understood, attention is directed to the accompanying drawings forming a part of this specification, and in which figure 1 represents a plan of my improved apparatus; figure 2 an enlarged section of the magnet; and figure 3 a diagram showing a series of the separators working in bank.

In all of the above views, corresponding parts are represented by the same numerals of reference.

1 represents a shaft, which is mounted in bearings 2, 2, and which may be driven in any suitable way, as for example from a pulley 3. The shaft 1 is provided with a cylindrical enlargement at its center constituting the core of the magnet. The poles of the magnet comprise the two disks 5, 5, which are bolted to the core as shown, and having the overhanging rims 6, 6, the free edges of which are adjacent to each other so as to form a gap between them. The coil 7 is wound on the core within the magnet, as shown, and is supplied with current through insulated collecting rings 8, 8 and brushes 9, 9. Preferably the polar faces 6, 6 are entirely enclosed in a thin sheet of non-magnetic metal, such as brass, 10, whereby the magnet will present a continuous operating face to the feed belt 11, which is made

of any suitable material. This belt extends over a pulley 12 carried on a shaft 13. The ampere turns in the coil 7 are so proportioned relatively to the mass of the magnetic poles as to result in the polar extremities 6, 6 thereof bearing ^{nearly} magnetically saturated. Material is fed to the belt 11 in any suitable way, as for instance from a hopper 14 having a roller feed 15. Mounted below the magnet is a suitable deflecting board 16, which may be actually located behind the vertical center of the magnet. Preferably a plurality of the separators are used, one above the other as shown in figure 3, the concentrates from the first separator passing by means of a chute 17 to a second separator 18, while the concentrates of this second separator pass by means of the chute 19 to a third separator 20. The final concentrates issue from the apparatus through a draw-off spout 21, while the non-magnetic particles are carried out of the apparatus through a spout 22.

The operation will be as follows: Power is applied to the shaft 1 to rotate the magnet and drive the belt 11 of each separator, and the mixed magnetic and non-magnetic particles are fed to the belt of the first separator, as for instance through the roller feed 15. The feed of the material to the belt may occupy substantially the entire width of the belt, since the entire polar faces of the magnet are, as stated, preferably magnetically saturated. The speed at which the belt is driven is very high, ranging generally from between six hundred and eight hundred feet or more per minute, but this speed should be so proportioned to the magnetic attraction of the magnet, to the magnetic affinity of the magnetic materials, and to the diameter of the magnet as not to result in the generation of a greater centrifugal force than is necessary to throw off the non-magnetic particles from the belt as it passes around the magnet. By

thus driving the belt at a relatively high speed, the non-magnetic particles will be thrown off therefrom in front of the deflecting board 16 by the centrifugal force which is developed, while the magnetic particles will be caused to tenaciously adhere to the belt by the magnetic attraction, and will be gradually carried by the belt away from the lines of magnetic force as the particles pass beyond the vertical diameter of the magnet until they finally drop off. By thus utilizing in a magnetic separator the effect of centrifugal force, and by so proportioning the centrifugal force that it tends to positively throw off of the belt all non-magnetic particles without, however, affecting the magnetic particles, I secure a very perfect and rapid separation; in fact, the effect of the centrifugal action in the apparatus is sufficient to cause non-magnetic particles which would otherwise be entangled and entrained with the magnetic particles and carried through the apparatus, to be actually disentangled therefrom and to be thrown out by the centrifugal force. I consider it preferable to use a plurality of these separators, because by doing so the speed of separation can be increased by feeding to the first separator magnetic and non-magnetic materials in large quantities, and in correcting imperfections in the first separation by the subsequent separators, it being obvious that any non-magnetic particles which may have passed through the first separator will have further opportunity in the second and final separators of being disentangled and removed from the magnetic particles.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. The improved process of separating magnetic from non-magnetic particles, which consists in bringing the

mixed particles in a field of magnetic attraction, in changing the direction of movement of such particles so as to result in the generation of centrifugal force which throws out the non-magnetic particles, and in withdrawing the magnetic particles from the magnetic attraction, substantially as set forth.

2. The improved process of separating magnetic from non-magnetic particles, which consists in feeding the mixed magnetic and non-magnetic particles to a rotating field of magnetic attraction, the speed of rotation thereof being sufficient to result in the generation of centrifugal force to throw out the non-magnetic particles, and in positively withdrawing the magnetic particles so separated from the rotating magnetic field, substantially as set forth.

3. The improved process of separating magnetic from non-magnetic materials, which consists in subjecting the mixed material to the joint action of magnetism and centrifugal force, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 3rd DAY OF January 1890.

THOMAS A. EDISON.

Witnesses:

1. W. S. MALLORY

2. J. F. RANDOLPH

Oath.

State of New Jersey
County of Essex

} ss.:

THOMAS A. EDISON, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States, and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;

THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN PROCESS OF MAGNETIC SEPARATION

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

THOMAS A. EDISON

SWORN TO AND SUBSCRIBED BEFORE ME THIS 3rd DAY OF January 1890.

(SEAL)

J. F. RANDOLPH

NOTARY PUBLIC for
New Jersey.

2-161.

#1022.

If communication should be addressed to
"The Commissioner of Patents,
Washington, D. C."

SERIES OF 1900.
No. 823.

DEPARTMENT OF THE INTERIOR,

United States Patent Office

Washington, D. C.,

Jan. 9



SIR:

I have to acknowledge the receipt of the petition, specification, oath, and drawing of your alleged improvement in

Process of Magnetic Separation.

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up for examination in its order.

The drawing is informal, but has been admitted for purposes of examination.

Part in section should be section line

You will be duly advised of the examination.

Very respectfully,

Case will be taken up for examination in about one month.

C. H. Druell
Commissioner of Patents.

J. A. Edison

*of Dyer, Edmonds & Dyer.
N.Y. City*

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all the parts, as here specified, are furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

If payment is made by check or draft, the credit granted is subject to the collection of the same.

2-011.
258
Receipt No. 258
All communications should be addressed to
The Commissioner of Patents,
Washington, D. C.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.

Feb. 8, 1900.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

No. 31 Nassau Street,

New York City, New York.



Please find below a communication from the EXAMINER in charge of your application.

#323, filed Jan. 9, 1900, for Process of Magnetic Separation.

C. H. Dyer
Commissioner of Patents.



Applicant's drawing has been criticized by the Chief Draftsman as follows:- "Informal; parts in section should be section lined. Admit for examination only." Should the case finally be found otherwise allowable, the drawing must be relieved of objections before the case can pass to issue. Applicant is required to eliminate "Case No. 1022" from the specification to the disclosure of which it adds nothing. The serial number and date of the application referred to in the second paragraph, page 1, are required to be inserted.

Each of the claims is recited as squarely met in the following patents: 348,771, Payne, Sept. 7th, 1886; 463,505, Hoffman, Nov. 17th, 1891; and 546,176, Buchanan, Oct. 22d, 1895--Magnetic Separators.

Rule 72. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the erasure or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper.

Case No. E-1022,

Abandoned,

Filed January 9, 1900,

Improvements in Process of Magnetic Separation.

C l a i m s .

1. The improved process of separating magnetic from non-magnetic particles which consists in bringing the mixed particles in a field of magnetic attraction, in changing the direction of movement of such particles so as to result in the generation of centrifugal force which throws out the non-magnetic particles, and in withdrawing the magnetic particles from the magnetic attraction, substantially as set forth.

2. The improved process of separating magnetic from non-magnetic particles, which consists in feeding the mixed magnetic and non-magnetic particles to a rotating field of magnetic attraction, the speed of rotation thereof being sufficient to result in the generation of centrifugal force to throw out the non-magnetic particles, and in positively withdrawing the magnetic particles so separated from the rotating magnetic field, substantially as set forth.

3. The improved process of separating magnetic from non-magnetic materials, which consists in subjecting the mixed material to the joint action of magnetism and centrifugal force, substantially as set forth.

①

The object of this invention is to sample and mix ores having a variable assay into a body of ore or rock having a known & even assay so that the further addition of any necessary ingredient in a subsequent operation upon the ore or rock can be made exactly to produce an even product or result. The invention is especially designed for mixing silicious limestone used in making Portland Cement. It is well known that the silicious limestone used for manufacturing Portland Cement by the dry process is a

RECEIVED
BY DECK
JUN 18 1883
RICHARD H. HOLT

2. Natural product of exceedingly variable character as regards the amount of the various ingredients consisting of lime, alumina, iron, magnesia, silica, etc. - that in the same quarry the rock will vary in its chemical constituents several percent in a few feet. This then rock is always deficient in lime to make a perfect Portland Cement. The practice is to ~~mix~~ mix a certain percent of limestone with it to obtain the right mixture - & it is the practice to mix several barrows of cement rock with one barrow of lime to effect this - In effecting the mixture in this way the small

3. are very inconstant & the quality of the Cement varies considerably. It being of course impossible to assay each barrow of Cement rock in a large works.

The object of this invention is to conveniently & practically effect the object of making a perfect mixture of Cement rock of known composition ~~so that~~ so that the addition of lime will produce a mixture giving a Portland Cement of constant quality independent of the variations of the rock in the Quarry.

The invention consists in Employing a large stock house at the end of the crushing

4. Works ~~from~~ which the rock passes to a Dryer & thence to the stock house and forming a number of piles of Cement rock & Limestone separated from each other & so delivering the Cement rock or Limestone to the piles that the cones formed shall so mixed in while being formed that when drawn out from under the stock house at many points under the cone, portions of the ore first put in shall be mixed with portions last put in - The ore or rock as it

5. goes into the stock house is continuously sampled by an automatic sampler arranged between the belt from the Dryer & the belt passing over the top of the stock house - This sampler takes a one pound sample every minute ~~of~~ during the formation of the Cone of rock in the stock house. The size of the Cone of ore should be such that it shall be the product of at least one day crushing of the Crushing plant to permit one day being given the chemist to make a careful assay of the samples taken

6. by the sampler which when obtained will represent the assay of the whole cone but without the Cone is thoroughly mixed when drawn off to another department of the works for mixing with the lime the assay will run uneven because of the first part of the day the Crushing plant delivers ore high in Silica while in the afternoon it delivers ore low in Silica & these two quantities were not thoroughly mixed in the Cone, on drawing out the other department might

7 get high silica rock at one
time & low silica rock
at another time whereas
the Cone as a whole would
have a definite assay
Hence it is essential not
only to know the actual
assay of the whole Cone
but that it shall be
drawn ~~out~~ out of the
stock house so mixed that
all that comes out
shall have the exact
assay of the sampler assay
to do this I provide

8
a spout on one side of the
Cone ~~and~~ this spout have
several apertures in its bottom
& is also open at its lower
end. These apertures are
controlled by rods extending
up along the spout to their
top of the stock house
where the belt delivers to
the spout <sup>these apertures are controlled by the main
belt chain</sup> I have illustrated
but a single Cone & spout
in fig ^{2nd} fig. - The lower end of
the spout is first opened. The
Cone formed by this spout is
shown by the hair lines when
the ore gets up to the spout &
closed it. The 2 apertures is opened
& so on until the Cone is
formed

9.

Underneath the cone are several spouts provided with roller feeds which can be adjusted to feed from the cone onto the conveying belt various amounts of ore until nearly all the ore of the cone is fed out, what remains is left there permanently as it will not mix with any rock of which subsequent cones are formed -

By thus delivering the ore to form the cone in this manner instead of forming it in the usual

10.

Manner of one spout at the top the rock is spread in the cone so the roller feeds give an ore as a whole fairly agreeing with the general assay of the sample but still not near enough to produce a perfect cement.

To attain this a further mixing is essential & I accomplish this by employing a double conveying system both on top & underneath the stock house -

11

one conveying system serves to take ore from the dryer & deliver it to any one of several piles or Cones while the corresponding belt under the stock house draws off any cone & conveys it to the next department of the mill -

The other conveying system is used purely for mixing. The operation is as follows after a cone has been made sampled & assayed - It is

12

fed out through the various roller feeds into the mixing Conveying belt underneath after leaving the stock house it ~~then~~ proceeds up an angle where it meets the belt going to the top of the stock house it dumps on this & is then carried to a clear part of the stock house & dumped to form a new cone when this cone is drawn off to the next department the mixing is so perfect that ~~the ore is as good as~~ it was the same as any of that of the

13. Sampler —

In the same stock house are also Lime rock Cones. The Crushing plant sometimes running for a day on Limestone & two or 3 days on Cement rock. The same mixing action takes place with the Limestone as with the Cement rock — but the Lime & Cement rock Cones are kept separate,

14. Having thus got both Lime & Cement rock in large quantities & of exact & known Chemical Composition all that is necessary to effect mixture of the two to give a resultant which will burn to perfect Portland Cement,

In another part of the factory I provide two large storage tanks holding about 100 tons each. I draw from the stock house & fill one with

15

Cement-rack the other
with Limestone under
these tanks are two smaller
tanks placed on scales
The attendant fills one
tank with Cement-rack &
weighs it having ascertained
the weight the percent of
Limestone necessary is known
from the sampler assay
of both & the requisite
amount of Lime is drawn
into the 2nd tank &
ascertained by weight
The Content of both tanks

16 - are then emptied into a
rotary mixer which after
a few revolutions to effect
perfect mixing is dumped
into a hopper from which
through a roller feed it
goes to a conveyor & thence
to a stockhouse from
which the mill is continuously
drawing -

fig 1

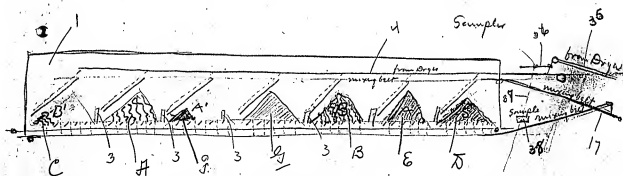
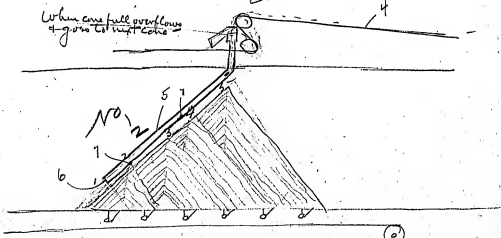


fig 1

A is cannot being carried
by mixing belt + blunger
at A'

S is a cone being formed from
Crushing plant + Dry air

[Signature]



franklin house

21

monitors

24

100 ton
Cement

22

100 ton
Lime

23

25

25

26

27

fig 4

sealer

28

30

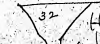
30

29

31



Mixer



Hopper

33

34

belt to silo house

34

2 or more belts at
20° ^{or thereabouts} or less to replace
elevators - Is this
patentable? Side chute
to carry from one belt
to the other -

Doesn't want to be
confined to ^{conical} shape of
pile - may use piles
of other shape - May ~~be~~
~~whisker~~ distribute into
vertical bins ^{one for each roller feed} must be so
that stuff at all stages
can be drawn off at
same time

~~Do~~ With bins ^{layers} need not
be inclined

Claim interposing mixer
between weighing mesh & delivery -
Mixes limestone as well as
cement rock

Claim multiple shafts for purpose
of taking from different portion
of pile simultaneously -

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 425.
SAMUEL O. EDMONDS,
REGISTRATION NO. 426.
FRANK L. DYER,
REGISTRATION NO. 424.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER, THOMAS A. EDISON, a citizen of the United States, residing and having his post office address at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT IN
MAGNETIC SEPARATORS

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

THOMAS A. EDISON.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN MAGNETIC SEPARATORS (Case No. 1023), of which the following is a description:

In my application case No. 1022 filed on even date herewith, I have described an improved process of magnetic separation consisting in bringing the mixed magnetic and non-magnetic particles into a field of magnetic attraction, in changing the direction of movement of such particles so as to result in the generation of centrifugal force which throws out the non-magnetic particles, and in withdrawing the magnetic particles from the magnetic attraction. The object of my present invention is to provide an improved apparatus for the carrying out of such a process.

In order that the invention may be better understood, attention is directed to the accompanying drawings forming a part of this specification, and in which figure 1 represents a plan of my improved apparatus; figure 2 an enlarged section of the magnet; figure 3 a diagram showing a series of the separators working in bank; figure 4 a longitudinal section of a modification; and figure 5 a section on the line 5-5 of figure 4.

In all of the above views, corresponding parts are represented by the same numerals of reference.

1 represents a shaft, which is mounted in bearings 2, 2, and which may be driven in any suitable way, as for example from a pulley 3. The shaft 1 is provided with a cylindrical enlargement at its center constituting the core of the magnet. The poles of the magnet comprise the two disks 5, 5, which are bolted to the core as shown, and hav-

ing the overhanging rims 6, 6, the free edges of which are adjacent to each other so as to form a gap between them. The coil 7 is wound on the core within the magnet, as shown, and is supplied with current through insulated collecting rings 8, 8 and brushes 9, 9. Preferably the polar faces 6, 6 are entirely enclosed in a thin sheet of non-magnetic metal, such as brass, 10, whereby the magnet will present a continuous operating face to the feed belt 11, which is made of any suitable material. This belt extends over a pulley 12 carried on a shaft 13. The ampere turns in the coil 7 are so proportioned relatively to the mass of the magnetic poles as to result in the polar extremities 6, 6 thereof being nearly magnetically saturated. Material is fed to the belt 11 in any suitable way, as for instance from a hopper 14 having a roller feed 15. Mounted below the magnet is a suitable deflecting board 16, which may be actually located behind the vertical center of the magnet. Preferably a plurality of the separators are used, one above the other as shown in figure 3, the concentrates from the first separator passing by means of a chute 17 to a second separator 18, while the concentrates of this second separator pass by means of the chute 19 to a third separator 20. The final concentrates issue from the apparatus through a draw-off spout 21, while the non-magnetic particles are carried out of the apparatus through a spout 22.

The operation will be as follows: Power is applied to the shaft 1 to rotate the magnet and drive the belt 11 of each separator, and the mixed magnetic and non-magnetic particles are fed to the belt of the first separator, as for instance through the roller feed 15. The feed of the material to the belt may occupy substantially the entire width of the belt, since the entire polar faces of the magnet are, as stated, preferably ^{nearly} magnetically saturated. The speed at

which the belt is driven is very high, ranging generally from between six hundred and eight hundred feet or more per minute, but this speed should be so proportioned to the magnetic attraction of the magnet, to the magnetic affinity of the magnetic materials, and to the diameter of the magnet as not to result in the generation of a greater centrifugal force than is necessary to throw off the non-magnetic particles from the belt as it passes around the magnet. By thus driving the belt at a relatively high speed, the non-magnetic particles will be thrown off therefrom in front of the deflecting board 16 by the centrifugal force which is developed, while the magnetic particles will be caused to tenaciously adhere to the belt by the magnetic attraction, and will be gradually carried by the belt away from the lines of magnetic force as the particles pass beyond the vertical diameter of the magnet until they finally drop off. By thus utilizing in a magnetic separator the effect of centrifugal force, and by so proportioning the centrifugal force that it tends to positively throw off of the belt all non-magnetic particles without, however, affecting the magnetic particles, I secure a very perfect and rapid separation; in fact, the effect of the centrifugal action in the apparatus is sufficient to cause non-magnetic particles which would otherwise be entangled and entrained with the magnetic particles and carried through the apparatus, to be actually disentangled therefrom and to be thrown out by the centrifugal force. I consider it preferable to use a plurality of these separators, because by doing so the speed of separation can be increased by feeding to the first separator magnetic and non-magnetic materials in large quantities, and in correcting imperfections in the first separation by the subsequent separators, it being obvious that any non-magnetic particles which may have passed through the

first separator will have further opportunity in the second and final separators of being disentangled and removed from the magnetic particles.

While I prefer to employ an apparatus using a rotating magnet around the polar faces of which the feed-belt passes directly, since such a construction is very simple and effective, yet it will be understood that the apparatus may be modified without departing from the scope of the invention. For example, the circular magnet may be held from rotation and may be provided with a rotatable shell working very close to the polar faces, and with which shell the belt may engage, as shown in figures 4 and 5. With this modification, a stationary shaft 23 carries a coil 24 which is surrounded by the two poles 26, 25. Mounted with respect to the stationary magnet thus formed, is a shell 26, which works very close to the polar faces, said shell being as thin as possible. This shell may turn upon the stationary shaft 23 and may be driven in any suitable way, as, for example, from a pulley 27. In order that the magnetic particles may be moved by the feed-belt 11 with respect to the stationary magnetic field which will be formed in the modified construction, said belt may be provided with transverse cleats 28, which effect a positive movement of the magnetic particles with respect to the field. With this modification, it will be observed that the centrifugal force will result in the separation of the non-magnetic particles, while the magnetic particles will adhere tenaciously to the belt in their movement with respect to the field.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:-

1. An improved magnetic separator comprising a feed device movable with respect to a fixed center, means for developing a magnetic field concentric to said center and adjacent to the feed device, means for feeding mixed magnetic and non-magnetic particles to the feed device, and means for moving said feed device at a sufficiently high velocity as to result in the generation of centrifugal force to throw off the non-magnetic particles but not sufficient to withdraw the magnetic particles from the effect of said field, substantially as set forth.

2. An improved magnetic separator comprising a feed-belt to which the mixed magnetic and non-magnetic particles are fed, a rotating support for said belt, whereby the belt is caused to move with respect to a fixed center, means for developing a magnetic field concentric to said center and within which the belt moves, and means for moving said belt at a sufficiently high velocity as to result in the generation of centrifugal force to throw off the non-magnetic particles but not to withdraw the magnetic particles from the effect of said field, substantially as set forth.

3. An improved magnetic separator comprising a rotating magnetic field, means for feeding mixed magnetic and non-magnetic particles to said field, means for rotating the field at a sufficiently high velocity as to result in the generation of centrifugal force to throw off the non-magnetic particles, and means for positively withdrawing the magnetic particles so separated from the effect of said field, substantially as set forth.

4. An improved magnetic separator comprising a rotating magnet, a belt passing around said magnet and to which the mixed magnetic and non-magnetic particles are fed, and means for moving said belt and magnet at a sufficiently

high speed as to result in the generation of centrifugal force to throw off the non-magnetic particles, substantially as set forth.

5. An improved magnetic separator comprising in combination a magnet consisting of a core and a pulleylike polar extremity carried by the core, a belt cooperating with said polar extremity and to which the magnetic and non-magnetic particles are fed, and means for moving said belt at a sufficiently high speed as to result in the generation of centrifugal force to throw out the magnetic particles, substantially as set forth.

6. An improved magnetic separator comprising a core, a disk at each end of said core, an overhanging polar extremity carried by each of said disks, the whole constituting a pulley, a belt cooperating therewith, means for feeding magnetic and non-magnetic material to said belt, and means for moving the belt at a sufficiently high speed as to result in the generation of centrifugal force to throw out the non-magnetic particles, substantially as set forth.

7. An improved magnetic separator comprising a core, a disk at each end of said core, an overhanging polar extremity carried by each of said disks, the whole constituting a pulley, a belt cooperating therewith, means for feeding magnetic and non-magnetic material to said belt, means for moving the belt at a sufficiently high speed as to result in the generation of centrifugal force to throw out the non-magnetic particles, and a shield of non-magnetic material covering the polar extremities, substantially as set forth.

8. An improved magnetic separator comprising a core, a disk at each end of said core, an overhanging polar extremity carried by each of said disks, the whole constituting a pulley, a belt cooperating therewith, means for

feeding magnetic and non-magnetic material to said belt, means for moving the belt at a sufficiently high speed as to result in the generation of centrifugal force to throw out the non-magnetic particles, and a magnetizing coil enclosed within the polar extremities of said magnet and so proportioned to the mass of the magnet as to result in the polar extremities being nearly magnetically saturated, substantially as set forth.

9. An improved separating apparatus comprising a plurality of magnetic separators arranged to successively act upon the concentrates from the previous separator, and each separator comprising a rotating magnet and a belt to which the material is fed, the speed of the belt being sufficient to throw off the non-magnetic particles by centrifugal force, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 3rd DAY OF January~~xxx~~ 1900

THOMAS A. EDISON

Witnesses:

1. W. S. MALLORY
2. J. F. RANDOLPH

Oath.

State of NEW JERSEY
County of ESSEX

} ss.:

THOMAS A. EDISON, THE ABOVE-NAMED
PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States, and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;
THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN MAGNETIC SEPARATORS

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

THOMAS A. EDISON

SWORN TO AND SUBSCRIBED BEFORE ME THIS 3rd DAY OF January ~~xxx~~ 1900

(SEAL)

J. F. RANDOLPH

NOTARY PUBLIC FOR
New Jersey.

2-101.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

#1023

{SERIES OF 1900.

No. 824

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C.,

Jan. 9



SIR:

I have to acknowledge the receipt of the petition, specification, oath, and drawing of your alleged improvement in

Magnetic Separators.

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up for examination in its order.

The drawing is informal, but has been admitted for purposes of examination.

Parts in section should be section made.

You will be duly advised of the examination.

Very respectfully,

Case will be taken up for examination in about one month.

C. H. Duell
Commissioner of Patents.

G. A. Carson

*G. Dyer, Edmond & Dyer,
717 City.*

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee. No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

See if payment is made by check or draft, the credit granted is subject to the collection of the fee.

Form No. 248
All communications should be addressed to
The Commissioner of Patents,
Washington, D. C.

8-071

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.,

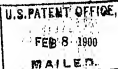
Feb. 8, 1900.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

No. 31 Nassau Street,

New York City, New York.



Please find below a communication from the EXAMINER in charge of your application.

#824, filed Jan. 9, 1900, for Magnetic Separators.



C. H. Duell
Commissioner of Patents

Applicant's drawing has been criticised by the Chief Draftsman as follows: "Informal; parts in section should be section lined. Admit for examination only." Should this application be finally found otherwise allowable, the drawing must be relieved of objection before the case can be passed to issue. Applicant is required to eliminate "Case No. 1023" from the preamble to the specification, and "case No. 1022" from the first line following the preamble, and to substitute the Office serial number and the date for the latter.

Claim 1 is rejected in view of 148,517, Smith, Mar. 10th, 1874; 348,771, Payne, Sept. 7th, 1886; 463,305, Hoffman, Nov. 17th, 1891, and 548,176, Buchanan, Oct. 22d, 1896.

Claim 2 is rejected in view of Smith, Hoffman and Buchanan, cited above.

Claim 3 is rejected in view of the references for claim 1.

Claim 4 is rejected in view of the references for claim 2.

Claim 5 is rejected in view of the references for claim 3, and British patent 15,885, Languth, July 30th, 1896.

RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the change or insertion is to be made. All such amendments must be on sheets of paper separate from the paper on which the original application is filed, and written on but one side of the paper.

See H. R. 23, letter of Apr. 3, 1900. Note made to obtain pat.

T. A. Nelson,

#624,

Sheet 2-

Claim 6 is rejected in view of Langguth, cited. The non-magnetic particles are discharged, in part, by centrifugal force in Langguth, and it would not involve invention to impart to Langguth's belt such a speed as to make such force the main factor in the discharge, in view of Smith, Hoffman and Buchanan, cited.

Claim 7 is rejected in view of Langguth, cited; and feature E, of 528,064, Williams, Oct. 23d, 1894.

Claim 8 is rejected as destitute of patentable novelty in view of Langguth, cited.

Claim 9 is rejected in view of Langguth and Buchanan, cited.

The references are in Mills; Ore & Coal, Magnetic Separators.

Examiner,

Division XIV.

Case No. E-1023,
Filed January 9, 1900.

Abandoned,

Improvements in Magnetic Separators,

C l a i m s .

1. An improved magnetic separator comprising a feed device movable with respect to a fixed center, means for developing a magnetic field concentric to said center and adjacent to the feed device, means for feeding mixed magnetic and non-magnetic particles to the feed device, and means for moving said feed device at a sufficiently high velocity as to result in the generation of centrifugal force to throw off the non-magnetic particles but not sufficient to withdraw the magnetic particles from the effect of said field, substantially as set forth.
2. An improved magnetic separator comprising a feed-belt to which the mixed magnetic and non-magnetic particles are fed, a rotating support for said belt, whereby the belt is caused to move with respect to a fixed center, means for developing a magnetic field concentric to said center and within which the belt moves, and means for moving said belt at a sufficiently high velocity as to result in the generation of centrifugal force to throw off the non-magnetic particles but not to withdraw the magnetic particles from the effect of said field, substantially as set forth.
3. An improved magnetic separator comprising a rotating magnetic field, means for feeding mixed magnetic and non-magnetic particles to said field, means for rotating the field at a sufficiently high velocity as to result in the generation of centrifugal force to throw off the non-magnetic particles, and means for positively withdrawing the magnetic

particles so separated from the effect of said field, substantially as set forth.

4. An improved magnetic separator comprising a rotating magnet, a belt passing around said magnet and to which the mixed magnetic and non-magnetic particles are fed, and means for moving said belt and magnet at a sufficiently high speed as to result in the generation of centrifugal force to throw off the non-magnetic particles, substantially as set forth.

5. An improved magnetic separator comprising in combination a magnet consisting of a core and a pulleylike polar extremity carried by the core, a belt cooperating with said polar extremity and to which the magnetic and non-magnetic particles are fed, and means for moving said belt at a sufficiently high speed as to result in the generation of centrifugal force to throw out the magnetic particles, substantially as set forth.

6. An improved magnetic separator comprising a core, an overhanging polar extremity carried by each of said disks, a disk at each end of said core, the whole constituting a pulley, a belt cooperating therewith, means for feeding magnetic and non-magnetic material to said belt, and means for moving the belt at a sufficiently high speed as to result in the generation of centrifugal force to throw out the non-magnetic particles, substantially as set forth.

7. An improved magnetic separator comprising a core, a disk at each end of said core, an overhanging polar extremity carried by each of said disks, the whole constituting a pulley, a belt cooperating therewith, means for feeding magnetic and non-magnetic material to said belt, means for moving the belt at a sufficiently high speed as to result in the generation of centrifugal force to throw out the non-magnetic particles, and a shield of non-magnetic material covering the polar extremities, substantially as set forth.

8. An improved magnetic separator comprising a core, a disk at each end of said core, an overhanging polar extremity carried by each of said disks, the whole constituting a pulley, a belt cooperating therewith, means for feeding magnetic and non-magnetic material to said belt, means for moving the belt at a sufficiently high speed as to result in the generation of centrifugal force to throw out the non-magnetic particles, and a magnetizing coil enclosed within the polar extremities of said magnet and so proportioned to the mass of the magnet as to result in the polar extremities being nearly magnetically saturated, substantially as set forth.

9. An improved ^{separator} apparatus comprising a plurality of magnetic separators arranged to successively act upon the concentrates from the previous separator, and each separator comprising a rotating magnet and a belt to which the material is fed, the speed of the belt being sufficient to throw off the non-magnetic particles of centrifugal force, substantially as set forth.

No. 2335Serial No. 825

E. 1024

Applicant.

Address. ✓

Thomas A. EdisonTitle Apparatus for drying and securing Ore and other material in bulk.Filed January 9, 1900Examiner's Room No. 261

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

- 1 Rejected Jan 29, 1900. 16
 - 2 Approved Feb 21, 1900. 17
 - 3 Revised Mar 6, 1900. 18
 - 4 _____ 19
 - 5 _____ 20
 - 6 _____ 21
 - 7 _____ 22
 - 8 _____ 23
 - 9 _____ 24
 - 10 _____ 25
 - 11 App. - Jan 10, 1901 26
 - 12 _____ 27
 - 13 _____ 28
 - 14 _____ 29
 - 15 _____ 30
- Albany*

RICHARD N. DYER,

31 Nassau Street,
NEW YORK CITY.

1

6.102 v

LAW OFFICES
OF
DYER, EDMONDS & DYER.
SPECIALTY:
Patents and Invention Cases,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 488.
SAMUEL O. EDMONDS,
REGISTRATION NO. 489.
FRANK L. DYER,
REGISTRATION NO. 490.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER THOMAS A. EDISON, a citizen of the United States, residing and having his Post Office address at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE APPARATUS FOR DRYING AND SCREENING COKE AND OTHER MATERIAL IN BULK

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful APPARATUS FOR DRYING AND SCREENING ORES AND OTHER MATERIAL IN BULK (Case No. 1024), of which the following is a specification:-

In my application Case No. 1017 (filed November 9, 1899, Serial No. 736,350), I describe and claim an improved process of drying and screening ores and other material in bulk, consisting in crushing the wet or damp ore or other bulk material, in passing the crushed material through a dryer by which it is dried, in then subjecting the dried, crushed material to a screening operation by which particles of sufficient fineness will be separated from the material and conducted to the point of use, in recrushing the tailings of the screen or screens, which tailings are known in the art as "returns", in mixing the recrushed, dry, hot returns with freshly crushed, wet material, and in passing the mixture again through the dryer, and so on. My present invention relates to an improved apparatus for carrying such a process into effect.

In order that the invention may be better understood, attention is directed to the accompanying drawing, showing the improved apparatus in diagram.

1 represents a pair of crushing rolls or other crushing apparatus, provided with a hopper 2, into which the wet or damp ore or other material in bulk is delivered. This crushing apparatus is of any suitable type. 3 is a conveyor or belt, located beneath the crushing apparatus 1 and re-

ceiving the crushed material therefrom. 4 is an elevator, into the boot of which the crushed material from the conveyor 3 is deposited. This elevator carries the crushed material upwards and deposits it in the hopper 5 of a dryer 6 of any suitable type. Preferably the dryer 6 is supplied with hot air from a furnace 7 and is provided on its interior with the inclined baffle-plates 8, by which the material will be caused to pass through the dryer in the shape of a plurality of flat, zig-zag streams. The crushed, dried material from the dryer 6 is deposited in the boot 9 of an elevator 10, and is conveyed by said elevator to a screening apparatus 11 of any suitable type. Preferably this screening apparatus comprises a plurality of screen sections 12, 12, and a series of checking surfaces 13, by means of which the material after it has passed over one screen section will be brought to rest before passing over the screen section next below. By thus passing the material more slowly over the screen sections, the screening operation is facilitated.

The fine material from the screens falls upon an incline 14 and is deposited on a conveyor 15, by which it is carried to the point of use. The tailings of the screens, which are in the form of dry, hot returns, are passed through a recrushing apparatus 16 of any suitable type and by which such tailings will be recrushed. The recrushed material from the recrushing apparatus 16 is deposited on the conveyor 3, so as to be intimately associated with the wet or damp material from the crushing apparatus 1.

The operation will be as follows:- The wet or damp ore or other material in bulk is supplied to the hopper 2 in the desired quantity and is crushed between the crushing rolls 1 or other crushing apparatus. The wet or damp,

crushed material being deposited on the conveyor 3 will be elevated by the elevator 4 and pass through the dryer 6, by which it will be dried. From the dryer 6, the crushed, dry material will be elevated by the elevator 10 and pass through the screening apparatus 11. Sufficiently fine material will be carried off by the conveyor 15, but the coarse tailings or returns will be passed through the re-crushing apparatus 16 and again deposited upon the conveyor 3. By thus adding the re-crushed, dry, hot returns to the wet or damp material on the conveyor 3, a part of the moisture carried by the wet or damp material will be driven out and the proportion of moisture contained in the mixture passing through the dryer 6 will be considerably reduced, so that a relatively small dryer may be used, utilizing comparatively low temperatures.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:-

1. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus; a dryer to which the crushed, wet or damp material is directed, a screening apparatus for screening the dried, crushed material from the dryer, and means for re-crushing the tailings of said screening apparatus and for mixing the re-crushed tailings with the crushed, wet or damp material, substantially as set forth.

2. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus to which the dried, crushed material from the dryer is directed, a re-crushing apparatus for re-crushing the tailings of the screening apparatus, and means for mixing the re-crushed, dry tailings

with the crushed, wet or damp material, substantially as set forth.

3. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus to which the dried, crushed material from the dryer is directed, a re-crushing apparatus for re-crushing the tailings of the screening apparatus, and a conveyor located beneath the crushing and re-crushing apparatus and onto which the crushed and re-crushed material is deposited, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 3rd DAY OF January 1900

Thomas A. Edison

Witnesses:

1. W.S. Mallory
2. J. F. Randolph

Oath.

State of New Jersey } ss.:
County of Essex

THOMAS A. EDISON

THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;
THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE APPARATUS FOR DRYING AND SCREWHING CRESS AND OTHER
MATERIAL IN BUTK
DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

Thomas A. Edison

SWORN TO AND SUBSCRIBED BEFORE ME THIS 3rd DAY OF January 1900

J. F. Randolph
NOTARY PUBLIC. for
New Jersey

(SEAL)

2-161.

#1024

All communications should be addressed to
"The Commissioners of Patents,
Washington, D. C."

SERIES OF 1900.
No. 825.

DEPARTMENT OF THE INTERIOR,

United States Patent Office

Washington, D. C.,



SIR:

I have to acknowledge the receipt of the petition, specification, oath, and drawing of your alleged improvement in

Apparatus for Drying & Screening Ice, &c., in Bulk.

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up for examination in its order.

The drawing is informal, but has been admitted for purposes of examination.

Part in solid black should be returned.

You will be duly advised of the examination.

Very respectfully,

Care will be taken of examination in about one month.

C. A. Duell
Commissioner of Patents.

Thomas A. Edison

*of Dyer, Edwards & Dyer,
21 Nassau St., N.Y. City.*

Any communication respecting this application should give the serial number, date of filing, and title of invention.

RECEIVED stamp is made by check or draft, the credit granted is subject to the collection of the same.

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all the parts, as here specified, are furnished in due form by the inventor or applicant.

2-571.

Room No. 261
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

WASHINGTON, D. C., Jan. 29, 1900.

Thomas A. Edison,
C/o Dyer, Edmonds & Dyer,
31 Nassau St.,
New York, N. Y.



Please find below a communication from the EXAMINER in charge of your application.

Ser No 825, Filed Jan. 9, 1900, for "Apparatus for Drying and
Screening Ores."

C. H. Duell
Commissioner of Patents.

This application has been taken up for examination.

The claims are rejected upon the patents to Cummer, No. 634, *Just in*
correction
199, Oct. 3, 1899, in Driers, Cyl., Int., Rot., Inclined, and No. 11
634,200, Oct. 3, 1899, in Driers -Processes. No invention would
be required to use one crusher to crush the material before it
reaches the drier, and another to crush the tailings from the screen.

THOMAS A. EDISON

APPARATUS FOR DRYING AND SCREENING ORES:

FILED JANUARY 9, 1900

SERIAL NO. 828.

:
:
:
ROOM NO. 261.
:
:
:

HON. COMMISSIONER OF PATENTS,

S I R :

Reconsideration of the claims is respectfully requested, for the following reasons:-

1. Applicant's invention relates to an apparatus for dealing with refractory materials, such as ore, necessitating the employment of crushing devices. The Gummer patents both relate to apparatus for treating soft and easily disintegratable material, like garbage.

2. Since applicant deals with refractory material, he employs of necessity in the apparatus a crushing device, but since Gummer employs his apparatus with garbage etc., he does not use a crushing device.

3. With applicant's apparatus, the crushed, wet or damp material is mixed with the recrushed, hot or dry tailings or returns before being introduced into the dryer. In the Gummer patent, the disintegrated tailings from the screen are added to the fresh garbage at the hopper of the dryer, so that there is not an intimate mixture.

4. So far as the third claim is concerned, it is limited specifically to "a conveyor located beneath the crushing and recrushing apparatus and onto which the crushed and recrushed material is deposited". By using a conveyor of this kind, the mixture of the crushed and recrushed material is facilitated. An equivalent, therefore, is not found in either of the Gummer patents of record.

Very respectfully,
THOMAS A. EDISON,

By

New York, February 21, 1900.

His Attorneys.

2-611.

Room No. 251.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., March 6, 1900.

T. A. Edison,

C/o Dyer, Edmonds & Dyer,

31 Nassau Street,

New York, N. Y.



Please find below a communication from the EXAMINER in charge of your application:

Ser No 825, Filed Jan. 9, 1900, for "Apparatus for Drying Ore, &c"

C. H. Duell
Commissioner of Patents.

This application has been again examined, and as no reason is seen for modifying the previous action, the claims are finally rejected upon the references of record. The apparatus shown in the references is described as intended for use in disintegrating and drying lignite and gypsum as well as garbage.

Case No. E-1024,

Abandoned,

Filed Jan. 9, 1900,

Apparatus for Drying and Screening Ores and other Material in Bulk.

C l a i m s.

1. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus for screening the dried, crushed material from the dryer, and means for recrushing the tailings of said screening apparatus and for mixing the recrushed tailings with the crushed, wet or damp material substantially as set forth.

2. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus to which the dried, crushed material from the dryer is directed, a recrushing apparatus for recrushing the tailings of the screening apparatus, and means for mixing the recrushed, dry tailings with the crushed, wet or damp material, substantially as set forth.

3. An apparatus for screening and drying wet or damp material in bulk, comprising in combination a crushing apparatus, a dryer to which the crushed, wet or damp material is directed, a screening apparatus to which the dried, crushed material from the dryer is directed, a recrushing apparatus for recrushing the tailings of the screening apparatus, and a conveyor located beneath the crushing and recrushing apparatus and onto which the crushed and recrushed material is deposited, substantially as set forth.

No. 23426. 1026Serial No. 3456Applicant
Thomas A. Edison

Address.

Title Method of Making Film Screening PlatesFiled January 31, 1900Examiner's Room No. 149

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

- 1 Reported Feb. 27, 1900 16
- 2 Amended Mch 29, 1900 17
- 3 Reported Apr. 17, 1900 18
- 4 Amended Aug 27, 1900 19
- 5 Exam. Report Sept. 19, 1900 20
- 6 Hearing set for Oct 8, 1900 21
- 7 Brief filed Oct 12, 1900 22
- 8 Decision Oct 16, 1900 23
- 9 _____ 24
- 10 _____ 25
- 11 _____ 26
- 12 _____ 27
- 13 _____ 28
- 14 _____ 29
- 15 _____ 30

*Abandoned**Noted
Prok
Sp. 2*

DYER, EDMONDS & DYER,

31 Nassau Street,

NEW YORK CITY

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 488.
SAMUEL O. EDMONDS,
REGISTRATION NO. 471.
FRANK L. DYER,
REGISTRATION NO. 583.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER, THOMAS A. EDISON, a citizen of the United States, residing and having his post office address at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE METHOD OF MAKING
FINE SCREENING PLATES

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Ilwellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful METHOD OF MAKING FINE SCREENING PLATES (case No. 1026), of which the following is a description:

My invention relates to the process of making fine screening plates of the type described in my application for patent filed June 29, 1899, Serial No. 722,229, said plates being of extreme thinness and having screening orifices, preferably slots, therein of greater width than the thickness of the plates. The object of the present invention is to provide a method of making such plates, whereby their durability will be increased.

In carrying my process into effect I subject the screening surface, and preferably both surfaces, of the plate to a hardening operation, the central portion of the plate remaining in a malleable condition, so that the plate will not be of objectionable brittleness.

In the accompanying drawing I show in figure 1 a cross-sectional view of a screen plate of extreme thinness and provided with elongated slots therein of greater width than the thickness of the plate, and in figure 2 a similar view illustrating the apparatus for carrying out the improved process followed in the partial hardening of such plates.

In both of the above views corresponding parts are represented by the same letters of reference.

A represents a thin sheet metal plate suitably hardened as I will explain, provided with orifices, preferably slots, a therein. The relation between the thickness of

the plate A and the width of the orifices a is such that the former dimension is less than the latter. In the specific instance illustrated I show a plate which is indicated as being .006 of an inch in thickness and having slots a therein which are indicated as being of a width each of .009 of an inch.

In making these screens I prefer to proceed substantially as follows: A sheet-iron plate A is first secured, and the orifices a are formed therein preferably in a punch-press with gang-dies or punches. The plate, after having been punched with the orifices, is then dipped in a bath of molten cyanide of potassium for a few seconds. It is then withdrawn and immediately laid upon a flat iron plate such as B (figure 2), over which is located a corresponding plate C, which is allowed to drop upon the punched plate A. The sudden chilling to which the plate A will be subjected by coming in contact with the larger masses of the plates B and C, serves to harden the plate A and to keep it perfectly flat until cooled. Any tendency of the plate A to warp or buckle during the cooling operation is thus overcome. After the punched plate A has sufficiently cooled, it is then immersed in a water bath to dissolve off the cyanide of potassium, and after this bath it is dried and oiled in any suitable and usual manner. As a specific instance of a convenient process for the proper hardening of plates .006 of an inch in thickness having punched slots therein each of a width of .009 of an inch, I will state that the plate may be allowed to remain in the molten bath of cyanide of potassium for thirty-five seconds, and during this period the iron will become ^{carbonized} carbonated to a depth of about .001 of an inch on each side. The surface hardening to which the screen plate will be thus subjected between the plates B and C will be of a very high order, while at the same time the

inner portions of the plate will be left sufficiently soft and pliable as to allow the plate to be bent or otherwise manipulated. If the plate were allowed to remain too long in the bath of cyanide of potassium, it would be rendered objectionably brittle, since the absorption of carbon would progress entirely through the same.

Instead of the special surface hardening process above described for the proper hardening of screen plates of this specific character, it will be understood that surface hardening of said screens may be carried out by the usual method of cementation by packing the plates in charcoal, leather, etc. I consider the special process above described to be preferable however, since it is more expeditious and the depth of ^{carbonizing} ~~carbonation~~ is under entire control.

Having now described the invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. The method of making screening plates which consists in first forming a series of orifices in a sheet of malleable metal, and in subjecting the screening surface of said metal to a hardening process, substantially as set forth.
2. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, and in subjecting both surfaces of said plate to a hardening process, substantially as set forth.
3. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in a ^{carbonizing} ~~carbonating~~ liquid, in then subjecting the screening surface to a chilling action, and in finally washing the plate to ~~remove such~~ liquid, substantially as set forth.
4. The method of forming screening plates which

consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in molten cyanide of potassium, in then subjecting the screening surface to a chilling action, and in finally washing the plate to remove the cyanide of potassium, substantially as set forth.

5. The method of making screening plates which consists in forming a series of orifices in a plate of malleable metal, in dipping said plate in a bath of molten cyanide of potassium, in chilling the screening surface of said plate, in maintaining the plate under a flattened pressure until cool, and in finally washing the plate for the removal of the cyanide of potassium, substantially as set forth.

6. The method of making screening plates which consists in forming a series of orifices in a plate of malleable metal, in dipping the plate in a bath of molten cyanide of potassium, in subjecting the plate to pressure between two ^{cooled} plates of larger mass, whereby the surfaces of the screen plate will be chilled and the plate will be maintained under pressure during the cooling operation, and finally, after the said plate has been cooled, in dipping it in a bath of water for the removal of the cyanide of potassium, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS

26th DAY OF January, 1900

Thomas A. Edison

Witnesses:

1. J. F. Rausch
2. Frederick C. McDonald

Oath.

State of

County of Essex

} ss.:

THOMAS A. EDISON, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States, and a resident of Llewellyn Park, in the
County of Essex, State of New Jersey;
THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE METHOD OF MAKING FINE SCREENING PLATES

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

SWORN TO AND SUBSCRIBED BEFORE ME THIS

26th DAY OF January, 1900

Thomas A. Edison

J. F. Rausch
NOTARY PUBLIC.

(SEAL)

Fig. 1

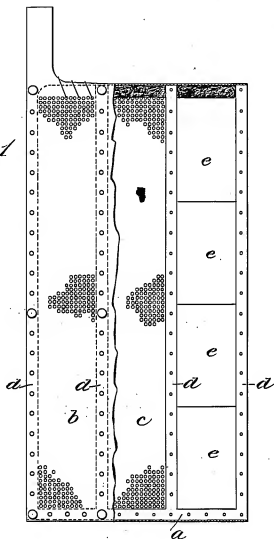


Fig. 2



Witnesses:

Jas. F. Coleman
Geo. R. Taylor

Inventor

Thomas A. Edison
by Alfred Edmunds

Att'y

2-161.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,

United States Patent Office

Washington, D. C., Jan 31, 1900.

SIR:

I have to acknowledge the receipt of the petition, specification, oath, and
drawing of your alleged improvement in

Method of making fine
screening plates

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken
up for examination in its order.

You will be duly advised of the examination.

Very respectfully,

Case will be taken up for
examination in about one month.

C. H. Duell
Commissioner of Patents.

J. A. Edison

1. Dyer Edmonde + Dyer

31 Nassau st ny city

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification, oath, and drawings (showing the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

SERIES OF 1900.



NOTE.—If payment is made by check or draft, the draft granted is subject to the collection of the same.

5-071.

Room No. 144.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

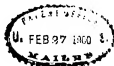
All communications respecting
an application must give the
date of filing, and title of the invention.



DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C. February 27 1900.

Thomas A. Raison,
Care Dyer, Ramonds & Dyer,
31 Nassau Street,
New York City.



Please find below a communication from the EXAMINER in charge of your application. For
Method of making Fine Screening- Plates. filed January 31 1900-
No. 6456.

C. H. Duell
Commissioner of Patents.

The word carburiized should be substituted for "carbonated"
in line 30, page 2, carburiization for "carbonation", line 14, page
5, and carburiizing for "carbonating", line 28, page 3.

The carburiizing agent is not liquid after cooling and hence
claim 3 is incorrect in statement.

What is meant by "flattened pressure", claim 5, is not clear.

In claim 6 the plates should be recited as cold, there being
otherwise no chilling action.

Claims 1, 2, 3 and 4 are rejected on U.S.No. 52796, Feby. 20, 1896,
Savage, A. & T. C. & C. H. Compounds; the use of the process of case
hardening there described for hardening screen plates, made in the
ordinary way, would not involve invention.

Claims 5 and 6 are rejected on patent to Savage, taken with
British No. 1037 April 25 1864, Dodge, A. & T. Hard App. Clamps.

RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified
and the precise point indicated where the emendation or insertion is to be made. All amendments must be submitted on a separate
sheet from the paper previously filed, and written on but one side of the paper.

THOMAS A. EDISON

METHOD OF MAKING FINE SCREENING PLATES

FILED JANUARY 31, 1900

SERIAL NO. 3456

ROOM NO. 149.

HONORABLE COMMISSIONER OF PATENTS,

S I R :-

In the above entitled application, we
amend as follows:

Page 2, line 30, erase "carbonated" and substitute
----- carburized -----

Page 3, line 14, erase "carbonation" and substitute
----- carburization -----

Claim 3, line 3, erase "carbonating" and substitute
----- carburizing -----; lines 5--6, erase "to remove
such liquid".

Claim 6, line 5, before "plates" insert -----cold-----

By the expression "flattened pressure" in claim 5,
applicant means the application of pressure which contains
the screening plate in a flattened condition. Re-
consideration of the claim is requested.

Applicant does not claim broadly or specifically a
method of case-hardening metal plates. The claims cover
applicant's invention of case-hardening screening plates
by which an essentially new article of manufacture will be
secured. So far as applicant knows, no one before his in-
vention ever made use of a screening plate which approached
in thinness the plates used by applicant. By using ex-
tremely thin screening plates, a very superior screening
operation can be effected; yet such plates would be entire-
ly worthless unless they were made durable enough for the
purpose, and to this end therefore, applicant subjects the

screens to a case-hardening process by which a hardened screening surface can be secured.

Very respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, March 29, 1900.

2-246.

Room No. 149.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

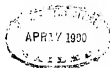
A. N. H.

WASHINGTON, D. C.,

Apr. 17, 1900



Thomas A. Edison,
Care Dyer, Edmonds & Dyer,
31 Nassau St.,
New York, N. Y.



Please find below a communication from the EXAMINER in charge of your application.

No. 3456, filed Jan. 31, 1900, -"Method of Making Fine Screening
Plates".

C. H. Duell
Commissioner of Patents.

Amendment filed Mar. 30, 1900, has been entered.

It is still held that the expression "flattened pressure"
is not descriptive, and the explanation of what is meant thereby
contained in the paper above referred to, is equally lacking in
clearness.

Claims 1, 2, 3, 4, 5 and 6 are again rejected on the ref-
erences cited and for the reasons given in last official letter.
It is still held that there is no invention in hardening screen
plates made in the ordinary way by old processes commonly em-
ployed for hardening other articles.

Ex'r Div. 3.

RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified
and the precise point indicated where the change or insertion is to be made. All such amendments must be on sheets of paper
separate from the papers previously filed, and written on but one side of the paper.

See every application for a patent filed subsequent to December 31, 1897, responsive action must be made by the
inventor within one year after the last office action or the case will become abandoned.

THOMAS A. EDISON,)
METHOD OF MAKING FINE SCREENING PLATES,)
FILED, JANUARY 31, 1900, : ROOM NO. 149.
SERIAL NO. 3456.)

HON. COMMISSIONER OF PATENTS,

Sir :

In the above entitled application, we hereby appeal to the Examiners-in-Chief from the decision of the Primary Examiner, who, on April 17, 1900, rejected for a second time, and finally, all the claims of the case, and we assign the following reasons of appeal:

1. That the Examiner erred in holding that the references of record meet the terms of the rejected claims;

2. That the Examiner erred in holding that the references meet the substance of the rejected claims; and

3. That the Examiner erred in not allowing the rejected claims.

An oral hearing is requested.

Very respectfully,

THOMAS A. EDISON,

By

His Attorneys.

31 Nassau St., New York,

August 29, 1900.

Room No.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-044.

DEPARTMENT OF THE INTERIOR



U. S. Patent Office,

Washington, D. C. Sep 1 1900, 189...

SIR:

I have to acknowledge the receipt of the ^{to} ~~APPEAL~~ ^{to} ~~for the~~

Ex in Chief

in your application for Improvement in

*Method of making Fine Screening
Plates.*

with *\$10*

the fee payable thereon.

Of the result due advice will be given.

Very respectfully,

C. H. Duell
Commissioner of Patents.

J. A. Edison

Of Dyer, Edmonds & Dyer.

31 Nassau Street

New York N.Y.

Duplicate to Decision
To Attorney



UNITED STATES PATENT OFFICE.

In re Application of Thomas A. Mison, : Before the
Filed Jan. 31, 1900, Ser. No. 3456,- : Examiners-in-Chief,
"Method of Making Fine Screening Plates". : On Appeal.
----- : Div.3, Sept.19, 1900.

Examiner's Statement.



The claims finally rejected are:

"1. The method of making screening plates which consists in first forming a series of orifices in a sheet of malleable metal, and in subjecting the screening surface of said metal to a hardening process, substantially as set forth.

"2. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, and in subjecting both surfaces of said plate to a hardening process, substantially as set forth.

"3. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in a carburizing liquid, in then subjecting the screening surface to a chilling action, and in finally washing the plate, substantially as set forth.

"4. The method of forming screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in molten cyanide of potassium, in then subjecting the screening surface to a chilling action, and in finally washing the plate to remove the cyanide of potassium, substantially as set forth.

"5. The method of making screening plates which consists in forming a series of orifices in a plate of malleable metal, in dipping said plate in a bath of molten cyanide of potassium, in chilling the screening surface of said plate, in maintaining the plate under a flattened pressure until cool, and in finally washing the plate for the removal of the cyanide of potassium, substantially as set forth.

"6. The method of making screening plates which consists in forming a series of orifices in a plate of malleable metal, in dipping the plate in a bath of molten cyanide of potassium, in subjecting the plate to pressure between two cold plates of larger mass, whereby the surfaces of the screen plate will be chilled and the plate will be maintained under pressure during the cooling operation, and finally, after the said plate has been cooled, in dipping it in a bath of water for the removal of the cyanide of potassium, substantially as set forth."

The references cited are:

- ✓ U. S. No. 52,796, Feb. 20, 1866, Savage, (A. & T., C. & G. H., Comp.);
Brit. No. 1,037, Apr. 23, 1864, Dodge, (A. & T., Hard. App., Clamps).

The alleged invention relates to the formation of screen plates, and, generally stated, the process may be said to consist in punching holes of the desired size in ordinary sheet iron, and then case hardening one or both surfaces. The surface hardening may be effected by any ordinary case hardening process (see last paragraph of the description and claims 1 and 2), but preferably, by heating the plate in molten potassium cyanide and chilling between cooled plates. (claims 4, 5 and 6).

The use of fused potassium cyanide for heating and carburizing wrought iron followed by chilling to harden the surface is old as shown by the patent to Savage, noted. In said patent the article is immersed in a bath of fused potassium cyanide and the patentee says: "Having allowed the metal to remain in the 'fused bath as long as desirable, I remove it and immediately 'submerge it in a cooling bath". (Lines 6 to 9, 2nd column). "I am thus enabled to produce the effects of case hardening on 'malleable iron to any given depth". (Lines 18 to 21, 2nd column). Although the patentee does not specify any particular article to be hardened no invention or experiment is necessary to extend the use of the process to any article made of malleable iron. The British patent to Dodge discloses the use of hollow boxes, cooled by a circulating current of water, and the "saw-blade plate or sheet of steel to be hardened is placed whilst in a heated state between them, whereupon the two boxes are caused to approach and compress the article between them". The use of this means for chilling in the bath of Savage does not amount to invention.

Respectfully submitted,

Ex'r Div. 3.

(2-051.)

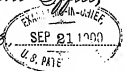
Room No. 242.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,



United States Patent Office,

Washington, D. C.



Thos. A. Edison

% J. J. Edwards & J. J. Edwards, attys.
New York.

N. Y.

SIR:

The appeal from the decision of the Examiner in the case of
Thos. A. Edison for a patent for an improvement in
Method of Making Fine Screening Plates
filed Jan. 11, 1900, 38-1, Serial No. 3,456, will be heard by the
Examiners-in-Chief, at 3 P.M. on Monday Oct. 8, 1900.

If appellant, or his attorney, shall not appear at that time the hearing will
be regarded as waived, and the case will be decided upon the record.

Very respectfully,

C. H. Duell
Commissioner of Patents.

THOMAS A. EDISON

METHOD OF MAKING FINE SCREENING PLATES

FILED JANUARY 31, 1900

SERIAL NO. 3466

BEFORE THE

EXAMINERS IN CHIEF

ON APPEAL.

BRIEF FOR APPELLANT.

Applicant makes use, in his ore milling and cement plants, of a large number of screening plates slotted in the direction of flow of the material. He found that by making the plates extremely thin, there was much less liability of particles becoming wedged in the screening openings than if the plates were thick. In other words, with very thin plates the walls of the screening openings are reduced to the minimum, and it becomes practically impossible for any particles to become wedged in the openings below the surface of the plate, as frequently does occur when relatively thick plates are used. Taking, for example, the figures mentioned in the drawings, the slots are less than one one-hundredth of an inch in width, while the plates themselves are only two-thirds as thick. With plates of this extreme thinness, it was found that they became quickly worn out. On the other hand, it would be impossible to punch or stamp the plates in steel in order that they might be durable. In order, therefore, to make an essentially new article of manufacture, i.e. an extremely thin but durable and flexible screen plate, applicant first forms the screening slots in a malleable sheet and then surface hardens it by an old and well known process. The novel step in each of the claims is "forming a series of orifices in a sheet of malleable metal", and so far as the references disclose, this is an entirely new step in the method of making case-hardened

screen plates.

In view of the commercial and practical value of the invention and the difficulty of claiming the article effectively except as a process, we think the claims should be allowed.

Respectfully submitted.

THOMAS A. EDISON,

By _____

His Attorneys.

New York, October 11, 1900.

No. 23,002.

U. S. Patent Office, Oct. 16, 1900.

Before the Examining-in-Chief, on Appeal.



Application of Thomas A. Nelson for a patent for improvement in Methods of Making Fine Screening Plates, filed Jan. 31, 1900. Serial No. 3, 455.

Messrs. Dyer, Kimbonds & Dyer for appellant.

The claims appealed are:

"1. The method of making screening plates which consists in first forming a series of orifices in a sheet of malleable metal, and in subjecting the screening surface of said metal to a hardening process, substantially as set forth.

"2. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, and in subjecting both surfaces of said plate to a hardening process, substantially as set forth.

"3. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in a carburizing liquid, in then subjecting the screening surface to a chilling action, and in finally washing the plate, substantially as set forth.

"4. The method of forming screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in molten cyanide of potassium, in then subjecting the screening surface to a chilling action, and in finally washing the plate to remove the cyanide of potassium, substantially as set forth.

"5. The method of making screening plates which consists in forming a series of orifices in a plate of malleable metal, in dipping said plate in a bath of molten cyanide of potassium, in chilling the screening surface of said plate, in maintaining the plate under a flattened pressure until cool, and in finally washing the plate for the removal of the cyanide of potassium, substantially as set forth.

"6. The method of making screening plates which consists in forming a series of orifices in a plate of malleable metal, in dipping the plate in a bath of molten cyanide of potassium, in subjecting the plate to pressure between two cold plates of larger mass, whereby the surfaces of the screen plate will be chilled and the plate will be maintained under pressure during the cooling operation, and finally, after the said plate has been cooled, in dipping it in a bath of water for the removal of the cyanide of potassium, substantially as set forth."

The references are U. S. patent to

Savage, February 20, 1866, No. 54, 796;
British patent No. 1, 037 of 1864 to Dodge.

The alleged invention in this case amounts to nothing more than the double use of an old hardening process. It is immaterial that the process is applied after the screening plate is completed by the formation of a series of orifices with which it must necessarily be provided, for it would be unreasonable for one to undertake to produce such orifices after subjecting the plate to the hardening process.

The patent to Savage discloses the particular hardening process which appellant employs and the British patent to Dodge shows that it is old to compress an article between cooled hollow boxes so as to retain the original shape of said article.

The decision of the Examiner is affirmed as to all of the appealed claims.

J. C. Stearns }
J. H. Brinkerton } Examiners-in-Chief.

3rd member absent.

Case No. E-1026,
Filed January 31, 1900.

Abandoned,

Method of Making Fine Screening Plates.

C l a i m s .

1. The method of making screening plates which consists in first forming a series of orifices in a sheet of malleable metal, and in subjecting the screening surface of said metal to a hardening process, substantially as set forth.
2. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, and in subjecting both surfaces of said plate to a hardening process, substantially as set forth.
3. The method of making screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in a carbonating liquid, in then subjecting the screening surface to a chilling action, and in finally washing the plate to remove such liquid, substantially as set forth.
4. The method of forming screening plates which consists in first forming a series of orifices in a plate of malleable metal, in dipping the plate in molten cyanide of potassium, in then subjecting the screening surface to a chilling action, and in finally washing the plate to remove the cyanide of potassium, substantially as set forth.
5. The method of making screening plates which consists in forming a series of orifices in a plate of malleable metal, in dipping said plate in a bath of molten cyanide of potassium, in chilling the screening surface of said plate, in maintaining the plate under a flattened pressure until cool, and in finally washing the plate for the removal of the cyanide of potassium, substantially as set forth.
6. The method of making screening plates which con-

sists in forming a series of orifices in a plate of malleable metal, in dipping the plate in a bath of molten cyanide of potassium, and in subjecting the plate to pressure between two plates of larger mass, whereby the surfaces of the screen plate will be chilled and the plate will be maintained under pressure during the cooling operation, and finally, after the said plate has been cooled, in dipping it in a bath of water for the removal of the cyanide of potassium, substantially as set forth.

No. 2369Serial No. 12,069

E. 1031

Applicant.

Thomas A. Edison

Address.

(27)

Title

Infty. in Stock House for Storing Material in Bulk

Filed

April 9, 1900Examiner's Room No. 261

Assignee.

Ass'g't Exec.

Recorded

Liber

Page

Patent No.

Issued

ACTIONS.

- 1 Reported May 5, 1900. 16
- 2 Amended Aug 29, 1900. 17
- 3 Reported Sept 10, 1900. 18
- 4 Amended Aug 7, 1901. 19
- 5 Revised Sept 16, 1901. 20
- 6 21
- 7 22
- 8 23
- 9 24
- 10 25
- 11 26
- 12 27
- 13 28
- 14 29
- 15 30

Abandoned
Sept 2-1902

DYER, EDMONDS & DYER,

31 Nassau Street,

NEW YORK CITY.

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 446,
SAMUEL O. EDMONDS,
REGISTRATION NO. 447,
FRANK L. DYER,
REGISTRATION NO. 448.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER THOMAS A. EDISON,
a citizen of the United States, and resident of Ilewellyn Park,
County of Essex, State of New Jersey, and whose post office address
is Ilewellyn Park, New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE

IMPROVEMENT IN STOCK HOUSES FOR STORING MATERIAL IN BULK,

(Case No. 1031)

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS
AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L.
DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF
SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERA-
TIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL
BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be It Known that I, THOMAS A. EDISON, a citizen of the United States, residing at Ilwellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN STOCK HOUSES FOR STORING MATERIAL IN BULK (Case No. 1031), of which the following is a description:

In preparing bulk material, such as iron ore and cement, for storage in stock houses where it accumulates ready for use or for future operations, the material is first passed through a drying apparatus. A dryer designed for the proper drying of the material under ordinary conditions may not be of sufficient capacity to properly dry the material when the latter contains an unusually high percentage of moisture, assuming, of course, that the flow of material through the dryer is not reduced. Even when the material may be properly dried, and especially when it is more or less hygroscopic, it accumulates moisture on its way to the stock house and while it is stored therein. For these reasons, it is desirable that means should be provided, in connection with a suitable stock house or other place of storage, by which the material in bulk therein may be subjected to an effective drying operation, and it is the object of my present invention to provide a suitable stock house for the storing of material in bulk and by which this result will be secured.

My invention is illustrated in the accompanying drawing forming a part of this specification, and wherein I show diagrammatically a suitable stock house for the purpose, together with a dryer, and suitable conveying and distributing devices.

1 represents a dryer supplied with hot air from a furnace 2 and having inclined baffle plates 3 within its interior over which the material may flow in a series of thin streams, being subjected in its fall to ascending currents of hot air and products of combustion from the furnace 2. 4 is an elevator or conveyor by which the fine material in bulk, such as iron ore or cement, may be fed to the top of the dryer. The dried material from the dryer is deposited in the boot of an elevator 5 and carried up to a distributing conveyor 6 mounted in the top of a stock house 7. The conveyor 6 is of any suitable type, by which the material may be deposited in the stock house in a series of separate piles 8, as shown. At one side of the stock house is a furnace 9 having a fire-box 10 and opening into the interior of the stock house at 11, as shown. Air is admitted beneath the fire-box through an opening 12 having a damper therein, and air may be admitted above the fire-box through an opening 13, also provided with a damper. ^{whereby such air will be heated before entering the stock house.} Circulation of air through the furnace may be effected by a blower connected below the fire-box, but preferably secured by an exhaust fan 14 connected with the stock house at the opposite end from the furnace.

In operation, the material, while it is being deposited in the stock house or after it has been deposited therein, will be subjected when necessary to the

AUG 29 1900.

effect of hot air and the products of combustion passing through and over the fire-box and out through the exhaust fan 14, whereby moisture will be effectively removed from such material.

APR 29 1960

...

• • •

-4-

a flow of products of combustion and hot air from the
furnace, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 28th DAY OF March 1900.

Thomas A. Edison

Witnesses:

1. J. F. Randolph
2. J. O. Boehme

Oath.

State of New Jersey } ss:
County of Essex

THOMAS A. EDISON, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A CITIZEN
OF THE United States, and a resident of Ilwellyn Park, in the
County of Essex, and State of New Jersey,

THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN STOCK HOUSES FOR STORING MATERIAL IN BULK

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

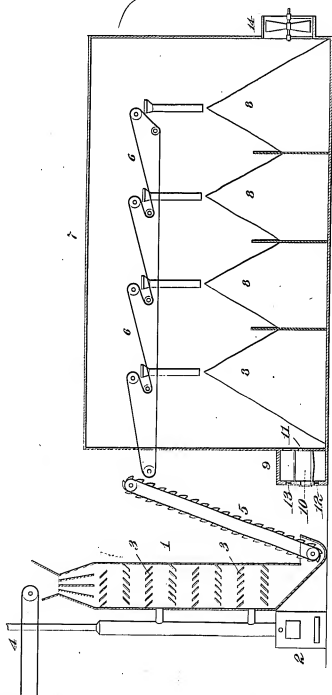
SWORN TO AND SUBSCRIBED BEFORE ME THIS 28th DAY OF March 1900.

(SEAL)

Thomas A. Edison
J. F. Randolph
NOTARY PUBLIC, for
New Jersey

Case 2369
Dropper

61031
1 sheet



Witnesses:

John H. Brown
Richard L. Brown

Inventor

Thomas H. Edison

by Alfred C. Brown & Alfred C. Brown

Att'ys.

2-161.

All communication should be addressed to
"The Commissioner of Patents,
Washington, D. C."

SERIES OF 1900.

No. 12069

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C., Apr 9, 1900.



SIR:

I have to acknowledge the receipt of the petition, specification, oath, and
drawing of your alleged improvement in

Stock - House for Storing
Material in Bulk

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken
up for examination in its order.

You will be duly advised of the examination.

Very respectfully,

Case will be taken up for
examination in about one month.

C. H. Duell
Commissioner of Patents.

J. A. Edison

70 Dyer Edmunds & Co

31 Nassau St

NY City

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification,
oath, and drawings (showing the nature of the case and of drawings) and to pay the required fee.

No application is considered as complete, nor can any official action be had thereon, until all the parts, as here specified, are
furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

RECEIVED APR 1900 DEPT. OF THE INTERIOR

2-246.

Room No. 26th
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application must give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., May 5, 1900.



T. A. Edison,

C/o Dyer, Edmonds & Dyer,

31 Nassau Street,

New York, N. Y.

Please find below a communication from the EXAMINER in charge of your application.

Ser No 12,069, filed April 9, 1900, for "Stock-House for Storing
Material in Bulk."

C. H. Duell
Commissioner of Patents.

This application has been taken up for examination.

The conveyor 6, should be more fully shown.

The blower mentioned in line 25, page 2, should be indicated
in the drawings.

Claim 3 appears to be unwarranted by the drawings.

The claims are all rejected for want of patentable novelty in

view of

Stone, No. 554,743, Feb. 18, 1896;
Prinz, No. 515,840, March 6, 1894;
Bardeen, No. 393,532, Nov. 27, 1888, and
Bell, No. 121,925, Dec. 19, 1871, in Driers - Houses and
Kilns.

In every application for a patent filed subsequent to December 31, 1897, responsive action must be made by the Commissioner of Patents within three months after the last office action or otherwise the application will become abandoned.

THOMAS A. EDISON
STOCK HOUSE FOR STORING MATERIAL
IN BULK

FILED APRIL 6, 1900

SERIAL NO. 12,069

ROOM NO. 261.

HON. COMMISSIONER OF PATENTS,

S I R :

A new drawing more fully illustrating the conveyor 6 will be filed before the allowance of the case.

Please amend as follows:-

Page 2, line 24, after "damper", insert -----whereby such air will be heated before entering the stock house-----.

Cancel claims 1, 2, 3 and 4, and substitute the following:-

-----1. In a stock house for storing material in bulk, the combination with a substantially closed storage chamber and a conveyor mounted therein near its upper part for distributing material in bulk in the storage chamber in a plurality of piles, of a furnace mounted adjacent to the storage chamber, and means for causing products of combustion from such furnace to enter the stock house and to directly engage the piles of material stored therein, substantially as and for the purposes set forth.

2. In a stock house for storing material in bulk, the combination with a substantially closed storage chamber and a conveyor mounted therein near its upper part for distributing material in bulk in the storage chamber in a plurality of piles, of a furnace mounted adjacent to the storage chamber, means for causing products of combustion from such furnace to enter the stock house and to directly engage the piles of material stored therein, and an exhaust fan

Examiner
Aug 1901

Same

located in the stock house opposite to said furnace for creating a draft through the stock house and furnace, substantially as and for the purposes set forth.

See

3. In a stock house for storing material in bulk, the combination with a substantially closed storage chamber and a conveyor mounted therein near its upper part for distributing material in bulk in the storage chamber in a plurality of piles, of a furnace mounted adjacent to the storage chamber, means for causing products of combustion from such furnace to enter the stock house and to directly engage the piles of material stored therein, and an air opening into the furnace above the fire-box thereof, whereby heated air from the furnace may also enter the stock house to effect a drying operation.-----

The claims above presented are limited to a stock house intended specifically for use in connection with the storage of material in bulk, and, therefore, distinguished from drying houses or kilns for drying malt and for curing meat and tobacco, as suggested by the several references.

Very respectfully,

THOMAS A. EDISON,

By _____
His Attorneys.

New York, August 29, 1900.

5-071.

Room No. 261.
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications regarding this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., Sept. 10, 1900.

Thomas A. Edison,
C/o Dyer, Edmonds & Dyer,
31 Nassau Street,
New York, N. Y.



Please find below a communication from the EXAMINER in charge of your application.

Ser No 12,069, filed April 9, 1900, for "Stock-House for Storing
Material in Bulk."

C. H. Duell
Commissioner of Patents.

This application, as amended, has been taken up for action.

The claims are rejected for want of invention in view of the
references of record, and patent to Merry No. 230,144, July 20,
1880, in Storehouse Conveyers.

THOMAS A. EDISON

STOCK HOUSE FOR STORING MATERIAL IN BULK

FILED APRIL 9, 1900

SERIAL NO. 12,069

ROOM NO. 261.

HONORABLE COMMISSIONER OF PATENTS,

S I R :—

Please amend as follows:

Change the title of invention to ----- Apparatus
for Drying and Storing Material in Bulk -----

Erase the claims and substitute:

----- 1. In an apparatus for drying and storing material in bulk, the combination with a dryer and an elevator extending therefrom, of a substantially closed storage chamber, a conveyor mounted therein near its upper part for distributing material in bulk in the storage chamber in a plurality of piles, said conveyor receiving material from said elevator, a furnace mounted adjacent to the storage chamber, and means for causing products of combustion from such furnace to enter the storage chamber and to directly engage the piles of material stored therein, substantially as and for the purposes set forth.

2. In an apparatus for drying and storing material in bulk, the combination with a dryer and an elevator extending therefrom, of a substantially closed storage chamber, a conveyor mounted therein near its upper part for distributing material in bulk in the storage chamber in a plurality of piles, said conveyor receiving material from said elevator, a furnace mounted adjacent to the storage chamber, means for causing products of combustion from such furnace to enter the storage chamber and to directly engage the piles of material stored therein, and an exhaust fan located

in the storage chamber opposite to said furnace for causing a draft through the storage chamber and furnace, substantially as set forth.

3. In an apparatus for drying and storing material in bulk, the combination with a dryer and an elevator extending therefrom, of a substantially closed storage chamber, a conveyor mounted therein near its upper part for distributing material in bulk in the storage chamber in a plurality of piles, said conveyor receiving material from said elevator, a furnace mounted adjacent to the storage chamber, means for causing products of combustion from such furnace to enter the storage chamber and to directly engage the piles of material stored therein, and an air opening in the furnace above the fire box thereof, whereby heated air from the furnace may also enter the storage chamber to effect a drying operation, substantially as set forth.-----

The claims above presented are drawn with special reference to the state of the art as disclosed by the references of record, and it is hoped that they may be allowed.

Very respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, August 7, 1901.

Room No. 2563
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

2-246.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C. Sept. 6, 1901.

T. A. Edison,
C/o Dyer, Edmonds and Dyer,
Orange, N. J.



Please find below a communication from the EXAMINER in charge of your application:

Ser No 12,069, filed April 9, 1900, for "Stock House for Storing
Material in Bulk."

H. I. Allen

Commissioner of Patents.

This application, as amended Aug. 8, 1901, has been taken up
for examination.

The claims are rejected upon the references of record, partic-
ularly in view of the patents to Edison, No. 660,845, Oct. 30, 1900,
and No. 662,063, Nov. 20, 1900, in Mortar Mixers.

Richard A. Dyer
Samuel P. Edwards
Frank L. Dyer

Law Offices
Dyer, Edwards & Dyer
Specialty: Patents & Patent Counsel.
31 Nassau Street,

Cable Address
"Inventors, New York"
Tel. No. 2910 East.

New York, Feb 14/12.

THOMAS A. EDISON
SUBJECT-MATTER: *Stock House for storing & vending in bulk*
FILED
SERIAL NO. *Apr. 9, 1912*
EXAMINER'S ROOM NO. *12068*
261

HONORABLE COMMISSIONER OF PATENTS,

S I R : —

In the above entitled application, please address further communications to us at our office, No. 31 Nassau Street, New York City.

Very respectfully,

Dyer, Edwards & Dyer
Attorneys of Record.

Case No. 1031

Abandoned.

Filed April 9, 1900.

IMPROVEMENTS IN STOCK HOUSES FOR STORING MATERIALS IN BULK.

Claims.

1. In a stock house for storing material in bulk, the combination of a storage chamber, a furnace adjacent thereto, and means for causing air heated by said furnace to be forced through the chamber into direct contact with the material stored therein, substantially as set forth.

2. In a stock house for storing material in bulk, the combination of a chamber in which the material is stored, a furnace opening into said chamber, and means for forcing through the chamber and into contact with the material stored therein the products of combustion from said furnace, substantially as set forth.

3. In a stock house for storing material in bulk, the combination of a chamber in which the material is stored, a furnace opening into said chamber, means for forcing through the chamber and into contact with the material stored therein the products of combustion from said furnace, and an air supply for admitting air above the furnace, whereby such air will be heated before entering the storage chamber, substantially as set forth.

4. In a stock house for storing material in bulk, the combination of a chamber in which the material is stored in bulk, a furnace opening into said chamber at one side, and an exhaust fan connected to the said chamber at the opposite side for maintaining through the

Case No. 1031 -2-

chamber a flow of products of combustion and hot air from the furnace, substantially as set forth.

Folio No. 4

Serial No. 1845

Applicant.

Address.

L. C. 1032

Title

Filed

Examiner's Room No. 24708

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No. 759,356

Issued

May 10, 1904

ACTIONS.

1. Received May 10, 1904 16
2. Received May 10, 1904 17
3. Received May 10, 1904 18
4. Received May 10, 1904 19
5. Received May 10, 1904 20
6. Received May 10, 1904 21
7. Received May 10, 1904 22
8. Received May 10, 1904 23
9. Received May 10, 1904 24
10. Received May 10, 1904 25
11. Received May 10, 1904 26
12. Received May 10, 1904 27
13. Amended Feb 23, 04 28
14. Allowed Apr 19, 1904 29
15. 30

FRANK L. DYER,

Counsel,

ORANGE, NEW JERSEY.

1

The object of this invention is to increase the output of Portland Cement Clinker in that class of burners called the "Rotary Cylinder burner".

The invention consists in a method of burning a greater amount of fuel in such cylinders without raising the temperature of any part above the greatest temperature which it is ^{usually} subjected to.

The invention further consists in the mechanism for ~~completing the carrying~~ out the improved method.

2

The Rotary cylinder burner now in common use for burning Portland Cement materials consists of a cylinder about 60 feet in length, lined with fire brick and having an inside diameter from 4 to 5 feet, ~~at one end~~ and the cylinder is ~~rotated~~ set on a slight incline ~~which~~. The powdered material being fed in at one end & the cylinder rotated the powder by reason of the inclination

of the cylinder advances
~~to the other end~~ through
 the whole length, the
 speed of progression depending
 upon the speed of rotation
 at the exit or lowest end
 of the cylinder ends in a
 closed chamber provided
 with an orifice at the bottom
 for the burned clinker to
 make its exit -

There is inserted in this
 chamber in an axial line
 with the bore of the rotating
 cylinder a nozzle through
 which powdered coal

mixed with compressed air
 is situated, This ^{air} nozzle
 projects the powdered coal
 into the cylinder. Total
 combustion of the coal takes
 place over ^{perhaps 20} feet of the
 lower end of the same -

The very high temperature necessary
 for the final clinking of
 the cement takes place
 however in a much more
 contracted area perhaps
 8 feet of the length of the
 cylinder.

With the above described
 cylinders about 2400 lbs
 of clinker is produced

Each hour. ~~and the temperature~~
 with an expenditure of
 about 800 lbs of coal dust
 and the ~~temperature~~ maximum
 temperature reached at
 the highest point is perhaps
 3000 deg fahr -

The gases of combustion are
 swept forward in the cylinder
 + impart their heat to the
 advancing material &
 find exit through the
 chimney at the extreme
 end where the cold
 material is fed into the ^{R. 102}
 cylinder -

The air for projecting the
 powdered coal through
 the nozzle into the cylinder
 being insufficient to
 effect its complete
 combustion natural draft
~~for~~ the additional air
 necessary to effect complete
 combustion finds entry through
 the orifice where the burst
 clinker leaves the cylinder
 the chimney producing the
 difference of pressure to
 move the air

7

It will be seen that the small amount of material which passes through the cylinder has so small a Capacity for ~~that~~ the absorption of heat when it enters the contracted zone of high temperature that it effects very little cooling & were it that there the temperature in this zone would not be ~~materially~~ raised but a few degrees.

In practice it is necessary that the temperature of the high temperature zone

8

should not vary except in narrow limits, if the temperature is too low the chemical reaction of the various ingredients which ~~go to~~ make up good cement does not take place or only partially so, whereas if the temperature is too high the clinker is nearly melted & is then overburnt & other undesirable chemical reactions taking place making an inferior cement.

~~If the temperature is too high the clinker is nearly melted & is then overburnt & other undesirable chemical reactions taking place making an inferior cement.~~

If with the proper amount of coal and air adjusted to produce the proper Chinking temperature the amount of material fed into the cylinder was ~~constant~~ made twice as great and the coal & air made twice as great. The result would be that there being twice as much coal burnt in the same space the temperature would ~~rise~~ rise in the high temperature zone so high.

that the chinkers would be melted and the fire brick itself would suffer injury. The extra amount of material not being able to materially lower the temperature in the hot zone hence with the usual cylinder as now arranged and operated the output is nearly fixed - cannot be exceeded.

I have found a method whereby the output can be greatly increased

~~This~~ This I do by altering the conditions of Combustion, and extending the area of high temperature over a greater length of the cylinder whereby I am enabled to burn a very much greater amount of fuel ~~and~~ and carry through a chamber a very ^{much} greater amount of "Exhaust" material without raising the temperature in any part

of the hot zone above the proper churning temperature.

I accomplish this result by causing two or more combustion zones within the cylinder.

To illustrate generally two nozzles are used.

one nozzle ~~has~~ is supplied with powdered coal and air at say 50 lbs pressure which serves to throw its fuel with great velocity into the cylinder so that the center of

its zone of combustion is
~~30~~ say 25 feet from
 the end of the cylinder
~~and by~~ the 2nd
 nozzle with coal and
 air at ^{only} 20 lbs pressure
 throws the coal so there
 is established
 another zone the
 center nearer the end
 of the cylinder. The
 column of air and coal
~~near the nozzle~~
 account of its great
 velocity, goes into the
 cylinder for considerable

distance before it spreads
 out & its temperature reaches
 the combustion point.
 by means of several
 nozzles with air at
 different pressures & with
~~approximately~~ the proper
 amount of coal fed to
~~each nozzle~~ each
 a very large amount of
 coal can be burned
 and the clinkering temperature
 spread over ~~up to~~ 50
 large an area that the
~~output of~~
~~number~~ output of

15

clinker can be vastly increased ~~the~~
 This effects a great saving in investment and labor of operating the cylinder per ton of output, ~~but~~ ^{another} saving is in the diminution of the amount of coal necessary to burn a ton of clinker which saving is due to diminished loss by radiation - In carrying out this invention it is best that the length of

16

March 28 1912

of the cylinder ~~is~~ ^{to} increased ~~to~~ from 60 to 90 feet to get the best economy of coal consumption. Such a cylinder with regenerative devices for saving heat is shown in my application no. —

Dyer

Here follows drawing & I will describe drawing - then you can if necessary devise the application for method & application claim

Folio No. 5

Serial No. 13406

Applicant.

Address.

J. C. C. (1893)

Title. *Apparatus for Burning Portland Cement Clunks
in Other Materials.*Filed *March 19, 1903*Examiner's Room No. *207 308*

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No. *759,357*

Issued

May 10, 1904

ACTIONS.

- | | |
|---------------------------------------------------|---------------------------------|
| 1. <i>Rejected Aug 23, 1901</i> | 16. <i>Issued Feb 20, 1904</i> |
| 2. <i>Amended Jan 12, 1901</i> | 17. <i>Amended Feb 23, 1904</i> |
| 3. <i>Rejected Aug 6, 1901</i> | 18. <i>Allowed May 22, 1904</i> |
| 4. <i>J. C. C. Aug 1, 1902</i> | 19. _____ |
| 5. <i>Rejected Aug 21, 1902</i> | 20. _____ |
| 6. <i>J. C. C. Jan 29, 1903</i> | 21. _____ |
| 7. <i>Rejected to Com. and Ref. Jan 29, 1903</i> | 22. <i>Done</i> |
| 8. <i>Appellate Brief filed Feb 7, 1903</i> | 23. _____ |
| 9. <i>Decision of Com. and Ref. Jan 10, 1903</i> | 24. _____ |
| 10. <i>Decision of Com. and Ref. Jan 10, 1903</i> | 25. _____ |
| 11. <i>Decision of Com. and Ref. Jan 10, 1903</i> | 26. _____ |
| 12. <i>Decision of Com. and Ref. Jan 10, 1903</i> | 27. _____ |
| 13. <i>Amended August 17, 1903</i> | 28. _____ |
| 14. <i>Rejected Sep 21, 1903</i> | 29. _____ |
| 15. <i>Amended Dec 3, 1903</i> | 30. _____ |

FRANK L. DYER,

Counsel,

ORANGE, NEW JERSEY

*Richard H. Dyer,
Samuel C. Edmunds,
Frank L. Dyer*

*Law Offices
of
Dyer, Edmunds & Dyer,
Specially: Patents & Patent Causes,
31 Nassau Street,
New York.*

*Cable Address
"Yankee New York"
Tel. No. 2000 Cor. R.*

New York, April 17, 1900.

Thomas A. Edison, Esq.,
Orange, N.J.

Dear Sir:-

We duly received the application papers on your improved method of and apparatus for burning Portland cement clinker and other materials. We have made the changes suggested by you in both specifications. We note that the claims in the method case do not require change, and, therefore, beg to return herewith for your use a copy of these claims. In the apparatus case, we have referred in the specification to the fact that one of the nozzles is preferably longer than the other, so as to allow the inertia of the fuel to be overcome, whereby the fuel will reach the same velocity as the air when both leave the nozzle. We have also referred in the apparatus case to the fact that the feed does not leak air, and that by changing the speed of feed the material can be regulated. We have erased the word "axially" from the claims, as referring to the location of the nozzles, and have used the expression "a plurality of nozzles projecting longitudinally with respect to the burner". We have also introduced two additional claims, numbered five and six, and beg, therefore, to enclose a copy

*Change
Recd*

(T. A. E., 2)

of the claims on the apparatus as they have been rewritten by us. The cases will be filed immediately, and blue prints of the drawings will be sent you as soon as received from the Patent Office.

Yours very truly,

Alfred Edwards Rogers

(F.L.D.)

Enclosure.

No. 2379E 1035Serial No. 15453

Applicant.

Thomas A. EdisonAddress. ✓Title Process of making metallic duplicate Phonograph RecordsFiled May 4, 1900.Examiner's Room No. 219

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. 657527 Issued September 11, 1900.

ACTIONS.

1. Replied June 8, 1900 16
2. Amended June 11, 1900. 17
3. Allowed July 2, 1900 18
4. Final fee paid Aug 17, 1900 19
5. _____ 20
6. _____ 21
7. _____ 22
8. _____ 23
9. _____ 24
10. _____ 25
11. _____ 26
12. _____ 27
13. _____ 28
14. _____ 29
15. _____ 30

DYER, EDMONDS & DYER,

31 Nassau Street,

NEW YORK CITY.

cup, water, then pour on more
brandy, then coat copper with gold
leafing, and varnish a parchment - then
on inside, with copper - then print off
onto coat down the vacuum deposit - then
band off vacuum coat.

1035

Applying in U.S. Est. with given data as
to other metals and proper acids -

Process for making metallic photo
records -

1st Record on Wax blank

2nd Vacuum deposit

3rd plating same with Copper $\frac{1}{32}$ thick
Melt out cylinder or remove out.

4th then coating this Copper outside
with a waterproofing cover, so silver
won't plate on outside

5th Immersing cylinder in a
Silver bath. & plating it inside
with silver on ~~the inside~~

to say $\frac{1}{32}$ thick then taking
from bath, & eating off the Copper
with Hydrochloric acid which
does not attack the Silver -
this leaves a Silver record which
could be backed up by plaster paris or
cement.

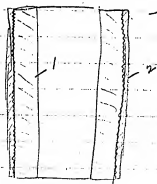


Fig 1

$\frac{6}{1035}$

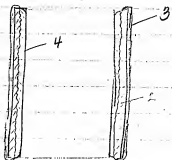


Fig 2

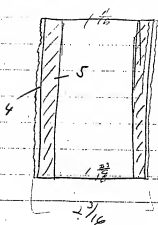


Fig 3

Dyer Ed.

1032

7/11/1900

yes

~~Belgium~~ inform

if I have taken out in
foreign Countries the
allowed application for



Making Duplicate Phonograph
Records filed May 4th 1900 -

If I have then let the patent
issue, If I have not then
prepare papers & take it out
in England France Belgium
& Germany & Canada

and withhold taking out
American patent till
foreign is safe -
Please answer -

T & E Edison

[FROM JOHN ROBERT TAYLOR]

July 12, 1900.

Thomas A. Edison, Esq.,
Orange,
N.J.

Dear Sir,-

We have your pencil memorandum of the 11th inst. in re United States allowed application for patent on duplicate phonograph records filed May 4, 1900. In reply we beg to state that no foreign patents have been applied for on this device, and in accordance with your instructions, we shall at once prepare papers and forward them to you for signature, in the meantime withholding the issue of the United States patent.

Yours truly,

(J.R.T.)

No. 2383E. 1036Serial No. 15874

Applicant.

Thomas A. Edison

Address.

Title Process of duplicating Phonograph RecordsFiled May 8, 1900.Examiner's Room No. 219

Assignee

Ass'g't Exec.

Recorded

Liber

Page

Patent No. 667662 Issued Feb 5, 1901

ACTIONS.

1. Reported June 12/1900. 16
2. Amended Aug 1/1900 17
3. Reported Sept 11/1900. 18
4. Amended Nov 2/1900 19
5. Reported Nov 20, 1900. 20
6. Appeal to Board Nov 28, 1900. 21
7. Examiner's statement filed Nov 17, 1900 22
8. Hearing set for Jan 9, 1901 at 2 P.M. 23
9. Appeal argued by G. L. A. 24
10. Brief Jan 9, 1901 25
11. Edison Jan 12, 1901 26
12. _____ 27
13. Allowed. - Jan 17, 1901 28
14. Final fee paid by Ed. Jan 17/01 29
15. _____ 30

DYER, EDMONDS & DYER,

31 Nassau Street,
NEW YORK CITY.

1036

Dyer -

Apr 25 1900
748

The object of this invention is
to produce ~~the~~ rapid & economical
production of Duplicates of
Photographic Records



The Invention consists in ~~forming~~^{causing} a
matrix as described in my
application _____

to act as a mould for receiving a
malleable material which solidifying
against the inner face of said
matrix gives a perfect impression
of the sound waves of the matrix
surface & when contracting after
solidification leaves it free of the
matrix so it can be ~~from~~ extracted
from the same. - The material

for forming the records in this manner
is ~~the~~ is preferably an alkaline soap
~~to be used~~ or a combination of several
soaps to which has been added
a material not affected by water
Such as Cresin to prevent the
action of chemistries of the
atmosphere upon the soap

In the figure a jar is heated
continuously & contains the material
in a melted condition to the
dotted line or there abouts
a cylinder is secured to the
bottom of this jar - at ^{over} the
bottom of this cylinder
are holes to permit the liquid

3

material to pass into the cylinder
 & over the top of the piston
 when it is on the bottom,

The Matrix is laid in the top end of
 the cylinder ~~and~~ fitting closely

The matrix has an extension x

which serves to permit excess of
 liquid to expand above the
 matrix & also to guide the

plunger = Supposing the
 Matrix to be cold the plunger

the whose piston fits well in
 fixed cylinder is forced down
 into the liquid which passes

4

out the cylinder by the holes at the bottom, the piston on striking the bottom goes below the holes when the liquid runs in.

The loss on the plunger being then soon reaches the temperature of the liquid. The matrix being at atmospheric temperature or preferably cooled below that point, is now ready for the upward movement of the plunger. This forces enough liquid into the matrix & above it into the extension to feed the

~~Contracting~~ The record when
 Contracting - The liquid are touching
 the cold surface of the matrix
 & almost instantaneously chilling becomes
 solid & the chilling takes place
 very rapidly until the liquid in
 contact with the inner core
 becomes solid. The plunger matrix
 is then removed & allowed to cool
 by an air blast & then to a point
 where it has ~~up~~ Contract away from
 the matrix so as to permit it to be
 removed by forcing down the
 plunger. Then the inner core is
 removed while ~~the material~~ before
 the inner part of the wax cylinder
 has contracted sufficiently to

pinch the core. The conductivity for heat of the material being very slow the outside surface of the cylinder becomes hard set while the inner portion next the core is ~~remains~~ in a plastic condition -

The record is then dressed at the edges, removed unnecessarily to size and ready for use.

When Records are made by this process the contraction of the material is very great ~~when~~ from its first set where the

7

impression of the matrix in the wax is produced to Normal temperature, hence it is necessary that the original records from which the matrix are made should ~~have~~ be taken on a phonograph having a different number of threads on its feed screw than the instrument upon which the records are to be finally used. If the record is to be used on a machine having 100 threads per inch then the original phonograph must have such a number of

of threads that the record ^{after} ~~and~~ shrinking shall have 100 threads per inch or approximately near that number the modern reproducing apparatus permitting of a variation of at least one thread in 4 inches.

The number of threads to be used for making the original record from which the matrix is to be made will depend upon the consistency of the material used & will have to be determined for each kind -

9
Claim this way forming record
from matrix =

also Matrix record different no
threshold than the matrix upon which
record is to be used to ~~print~~
allow for contraction,

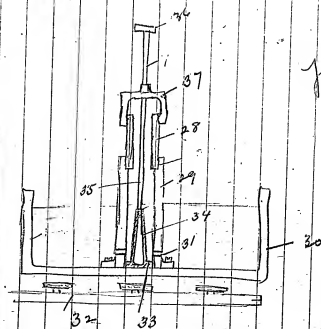
also the apparatus —
that confined to this particular form as there
are many ~~ways~~ ^{ways}
The upward rapid filling of the
mould from below —

Etc =

This will be a part of
foreign as well as US ~~application~~ ^{application}

I will be back Monday
~~so~~ probably set up at
Lab till Tuesday - you
can then come over &
we will finish for you
Matrix protocol & also
new US in Matrix deep
principles — E. L. L.

~~1036~~
1036



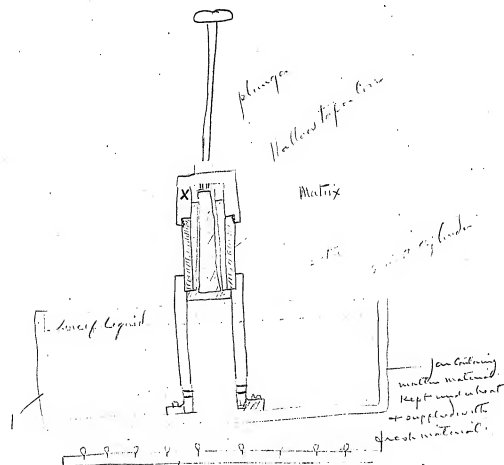


Fig 2

Graphophone Record.

Records made in New York, on soft wax. From each master a single record is made, one only for each edition. From the master record, a number of duplicates ^{as 2000 copies} made by dipping and compressing as in Miller's patent process, with water jacket. These duplicates used as masters for several editions from which commercial duplicates are made. Does good plastic at first, but soon becomes green by gas dissolving off. Records seldom changed.

First tray containing eight molds immersed in wax at 400° and kept for five minutes. Then removed and dipped in lukewarm

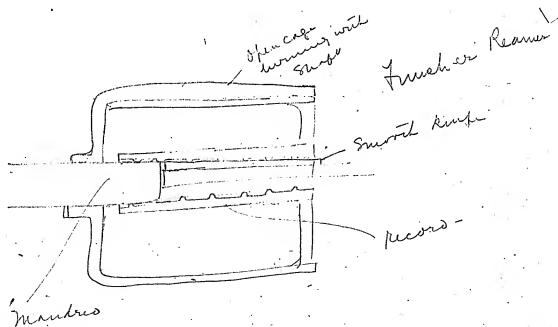
water for five minutes, making additional three passes in to allow for ^{removal of} wax set. Then core lifted out.

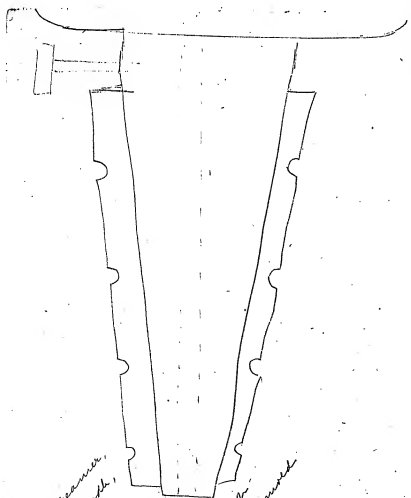
Then rough reamed. Then put aside to cool, and shrunk out.

Duplicate about two inches longer than Edison's, to allow space for mandrels to turn them in further reamer. Then rough edged -

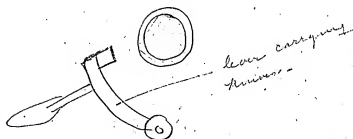
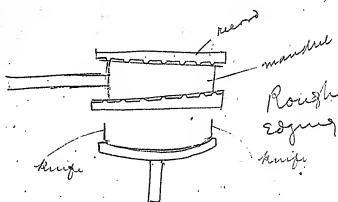
Then, finishing reamer, - Finally, further edged - exactly like Edison's.

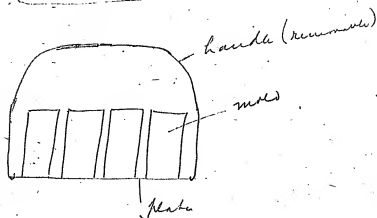
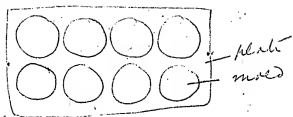
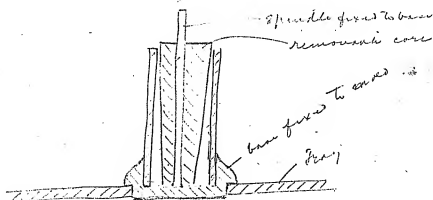
Box composed of stearic acid, heated to boiling point, when paraffin added, then "eye" (composed of fats, washing soda etc.), and finally "top-rose", for hardening, probably camellia wax.





Rough hammer
guides by hand,
and having
radiating as-
pectives
Anvil.
Rough rough
remains in metal





Night average 16000.

Discards 9000

Night output 7000

Day average 20000.

Discards 7000

Day output 13000.

No. 2386E. 1039Serial No. 20556

Applicant.

Thomas A. Edison

Address. ✓

Title Apparatus for Coating Monograph Record
or other Articles.Filed June 16, 1900.Examiner's Room No. 149

Assignee _____

Ass'g't Exec. _____

Recorded _____

Liber _____

Page _____

Patent No. _____

Issued _____

ACTIONS.

- 1 Report July 17, 1900. 16
2 Amended July 17, 1901. 17
3 Report July 13, 1901. 18
4 Amended June 3, 1902 19
5 Ex. from June 2 1902 20
6 _____ 21
7 _____ 22
8 _____ 23
9 _____ 24
10 _____ 25
11 _____ 26
12 _____ 27
13 _____ 28
14 _____ 29
15 _____ 30
- Examination fully covered
process of 20555-2
by E. 1039
Dr. J. L. D.*

DYER, EDMONDS & DYER,

31 Nassau Street,
NEW YORK CITY.

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALTY,
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 409.
SAMUEL O. EDMONDS,
REGISTRATION NO. 411.
FRANK L. DYER,
REGISTRATION NO. 280.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER THOMAS A. EDISON,
a citizen of the United States, residing at Ijewellyn Park,
County of Essex, and State of New Jersey, and whose Post Office
address is at said Ijewellyn Park, Essex County, New Jersey,
PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE

APPARATUS FOR COATING PHONOGRAPH RECORDS OR OTHER ARTICLES
(Case No. 1039),

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS
AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L.
DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF
SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERA-
TIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL
BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be It Known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex, and State of New Jersey, have invented a certain new and useful APPARATUS FOR COATING PHONOGRAPH RECORDS OR OTHER ARTICLES (Case No. 1039), of which the following is a specification:

In an application filed on even date herewith I describe a process particularly adapted for coating phonograph records with an infinitesimally thin film of metal offering a conducting base for a more rapid deposit by electrodeposition, whereby an absolutely accurate matrix or mold of a phonograph record can be secured, said process being also adapted for other uses, as explained, and being intended as a specific improvement upon the process described in my patent No. 526,147, dated September 18, 1894.

My said process consists in maintaining the object to be plated, and rotating the same, in an exhausted chamber, and in establishing from an electrode of which the deposit is to be made and a second electrode, made preferably also of the same metal, a silent or brush electrical discharge, whereby the metal will be vaporized and caused to deposit upon the object, the process also consisting specifically in magnetically rotating the object to be coated from the exterior of the exhausted chamber.

My present invention relates to an improved apparatus for carrying this process into effect, and the apparatus is illustrated in the accompanying drawing, showing the same in section.

1 represents a base, and 2 a vacuum chamber or jar fitted with an airtight joint upon the base. 3 is a pipe connected to the interior of the jar and by means of which air may be exhausted therefrom in any suitable way, as by an air pump or by a Sprengel vacuum pump. When the proper vacuum has been secured, it is retained by closing a valve 4 in the pipe 3 or by maintaining the vacuum pump in constant operation. 5, 6 represent two supporting arms made preferably of glass and leading up within the interior of the jar or vacuum chamber, said supporting arms being preferably further insulated from the base by means of hard rubber insulating bushings 5. A conductor 7 leads up within each of the supporting arms and is formed with a hook 8 at its upper end. Suspended from each hook is an electrode 9 of the metal to be deposited upon the object to be coated, such electrodes being preferably in the form of thin wires or strips of foil of such metal. For the making of a vacuous deposit upon phonograph records, the electrodes 9 are made preferably of strips of gold foil. 10 is a standard mounted between the electrodes and carrying a rotatable head 11 at its upper end, said head having a tapered periphery from which is supported a phonograph record 12 having a tapered bore, as is common. The record may be supported in any other way, and when the process is used for the coating of other articles than phonograph records such

articles will be properly supported from the rotatable head in any desired manner. 13 is an iron or steel armature carried by the rotatable head 11 and adapted to be attracted by a magnet 14 rotatable on the exterior of the vacuum chamber. An ordinary horseshoe magnet may be conveniently used for the purpose. I illustrate the magnet 14 as being supported by an arm 15 from a shaft 16 carried by a suitable bracket 17 and rotated by a pulley 18.

In operation, a silent or brush discharge is established between the electrodes 9, 9, in any suitable way, as, for example, by connecting the conductors 7 with the secondary of a large induction coil 19, the primary 20 of which is included in a vibrator 21 and a source of current 22. The brush or silent discharge being established between the electrodes and the magnet 14 being rotated on the exterior of the vacuum chamber to attract the armature 13, the object to be coated will be rotated between the electrodes, while the metal vaporized by the discharge will be deposited upon said object in the form of an infinitesimally thin and practically uniform film. When the object to be coated is a phonograph cylinder, the latter after being coated, is removed, and may be placed in a plating bath, so as to receive a heavier deposit by a process of electrodeposition, after which the original record is removed, either by melting it out or by shrinking it from the deposited metal, whereby an absolutely accurate matrix or mold of the original record may be secured.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is, as follows:

1. An improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, an electrode of the metal to be deposited and a second electrode in said chamber, and means for establishing between said electrodes a silent or brush electrical discharge, substantially as set forth.

2. An improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, an electrode of the metal to be deposited and a second electrode in said chamber, means for establishing between said electrodes a silent or brush electrical discharge, and means for rotating the object, substantially as set forth.

3. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber containing the object to be coated, two electrodes in said chamber made of the metal to be deposited, said electrodes being placed diametrically of the object, and means for establishing between said electrodes a silent or brush electrical discharge, substantially as set forth.

4. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber containing the object to be coated, two electrodes in said chamber made of the metal to be deposited, said electrodes being placed diametrically of the object,

means for establishing between said electrodes a silent or brush electrical discharge, and means for rotating the object, substantially as set forth.

5. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber, means within the chamber for securing a vacuum deposit on the object, means for supporting the object within the chamber, an armature connected to ^{said support,} ~~the object,~~ a magnet on the outside of the chamber for attracting said armature, and means for rotating the magnet with respect to the chamber, substantially as set forth.

4. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber, two electrodes within said chamber on opposite sides of the object to be coated, an induction coil the secondary of which is connected to said electrodes, and means for energizing said induction coil for producing a silent or brush discharge between said electrodes, substantially as set forth.

5. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber containing the object to be coated, a pair of insulating supports within the chamber, electrodes carried by said ^{a support for the object between said electrodes} supports and made of the metal to be deposited, and means for establishing a silent or brush discharge between said electrodes, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 15th DAY OF May, 1900.

Thomas A. Edison

Witnesses:

1. J. F. Randolph
2. H. S. Malloy

Oath.

State of New Jersey } ss.:
County of Essex }

THOMAS A. EDISON, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A CITIZEN
OF THE United States, residing at Ilwellyn Park, County of
Essex, and State of New Jersey,

THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE APPARATUS FOR COATING PHONOGRAPH RECORDS OR OTHER ARTICLES
(Case No. 1039),

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

Thomas A. Edison

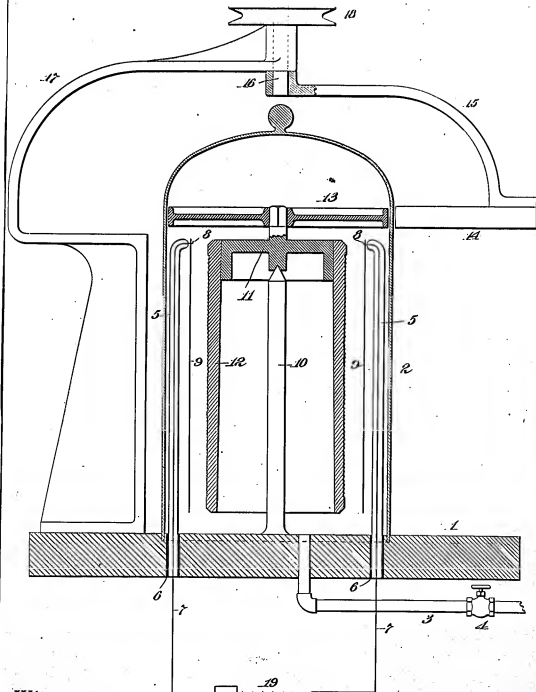
SWORN TO AND SUBSCRIBED BEFORE ME THIS 15th DAY OF May, 1900

(SEAL)

J. F. Randolph
NOTARY PUBLIC
H. S. Malloy

Dropped

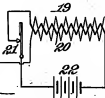
*E1039
1st class*



Witnesses:

John F. Coleman

John R. Taylor



Inventor

Thomas A. Edison

John Edmunds

Att'ys.

1039
2-161.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,

United States Patent Office

Washington, D. C., June 10, 1900.

SERIES OF 1900.

No. 20,536



SIR:

I have to acknowledge the receipt of the petition, specification, oath, and
drawing of your alleged improvement in

Apparatus for coating Chronograph
Records

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken
up for examination in its order.

You will be duly advised of the examination.

Very respectfully,

Care will be taken up for
examination in about one month.

C. A. Duell
Commissioner of Patents.

J. A. Edison

per J. A. Edison & J. A. Edison
my best

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish his petition, specification,
oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are
furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

If payment is made by check or draft, the credit granted is subject to the collection of the money.

2-246.

Room No. 147,
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,

A. M. H.

UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.,

July 17, 1900.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

31 Nassau St.,

New York, N. Y.



Please find below a communication from the EXAMINER in charge of your application.

No. 20,556, filed June 16, 1900,—"Apparatus for Coating Phonograph Records, &c."

C. H. Dyer

Commissioner of Patents



Claims 1, 2, 3, 4, 6, 7 are objected to as alternative in the words "a silent or brush electrical discharge"; presumably the means for establishing these two forms of discharge are not identical.

Claims 3, 4, 6, 7 are rejected for the reason that there is no combination between the device and the object to be coated which is contained therein; the support for such object should be included and the electrode should be located with reference to the structural features of the device.

Claim 5, line 5, to be should be inserted before "connected". The expression "vacuous deposit", claim 5, is objected to as indistinct.

Claims 1, 6, 7 are rejected on:

German 82,247, July 1, 1895, Boas, (Cathodes, Metallizing);

German 85,435, Feb. 19, 1896, Boas, " "

Claims 2, 3, 4 are rejected on the above patents, taken with:

U. S. 484,582, Oct. 18, 1892, Edison, (Phonograms, Duplicating). There would obviously be no invention in view of the United States patent, in applying the process of Boas to the duplication of sound records.

Claim 5 is rejected on the patents cited, taken with:

U. S. 548,131, Oct. 15, 1895, Moore, (Lighting Systems),

who shows it to be old to rotate objects contained within a

"vacuum chamber by means of an external magnet."

RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the change or insertion is to be made. All such amendments must be on sheets of paper and be from the pages previously filed, and written on but one side of the paper.

Ex'r Div. 5.

In every application for a patent filed subsequent to December 31, 1897, responsive action must be made by the inventor within one year after the last office action or the case will become abandoned.

File cited in 81038.

THOMAS A. EDISON

APPARATUS FOR COATING PHONOGRAPH RECORDS:

ROOM NO. 149.

FILED JUNE 16, 1900

SERIAL NO. 20,556

HON. COMMISSIONER OF PATENTS,

S I R :

Please amend by erasing claims 1 and 2 and substituting the following:-

-----1. An improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, a support for the object within said chamber, an electrode of the metal to be deposited adjacent to said support, a second electrode on the other side of said support, and means for establishing between said electrodes a silent or brush electrical discharge, substantially as set forth.-----

Change the numerals of claims 3 and 4 to 2 and 3.

Erase claim 5.

Change the numerals of claims 6 and 7 to 4 and 5.

Present claim 5, line 5, after "deposited", insert

-----a support for the object between said electrodes-----

The apparatus for generating a silent electrical discharge is the same as the apparatus for generating a brush electrical discharge -- merely a difference in adjustment effects the character of the discharge. Hence the claims are not alternative.

Regarding claims 2, 3 and 4, we submit that the object is not brought into the combination as an element, but only as a convenient way for characterizing or defining the loca-

tion of the electrodes. With the Boas patent No. 82,247, it is not clear that the object is placed between the two electrodes. Presumably such is not the case, since the object to be coated is a mirror. With the Boas patent No. 85,435, the drawing very clearly shows the cathode between the anode and the object.

It is thought the case as now presented should be allowed.

Very respectfully,

THOMAS A. EDISON,

By _____

His Attorneys.

New York, July 5, 1901.

2-246.

Room No. 42...
All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,

A.M.H.

UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.,

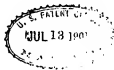
July 13, 1901.

Thomas A. Edison,

Care Dyer, Edmonds & Dyer,

Edison Laboratory,

Orange, N. J.



Please find below a communication from the EXAMINER in charge of your application.

No. 20,556, filed June 16, 1900,—"Apparatus for Coating Phonograph-Records, &c."

R. I. Allen
Commissioner of Patents.

Amendment filed July 6, 1901, has been entered.

Claims 2, 3, 4, 5 are again rejected for the reason that there is no combination between the apparatus and the object to be operated upon; these claims should be written after the manner of claim 1, to directly include the support for the object and to define the position of the electrodes with relation thereto.

Claim 1 is rejected upon the patents to Boas, cited. Attention is called to the fact that the disposition of apparatus employed in the patent 82,247 is more fully described in the later patent, it being stated therein, page 1, column 1, that the object to be coated is placed between the electrodes.

Claims 2, 3, 4, 5 are again rejected on the references of record.

Exam' Div. 3.

Richard A. Dyer
Samuel C. Edmunds
Frank L. Dyer

Law Offices
Dyer, Edmunds & Dyer
Specialty: Patents, & Patent Causes.
31 Nassau Street,

Cable Address
"Inverness, New York"
Pl. No. 2910 New York

New York, Feb 14, 1902

THOMAS A. EDISON

SUBJECT-MATTER: *Apparatus for transmitting Photographs by Electric*

FILED *June 16, 1902*

SERIAL NO. *20566*

EXAMINER'S ROOM NO. *149*

HONORABLE COMMISSIONER OF PATENTS,

S I R :__

In the above entitled application, please address further communications to us at our office, No. 31 Nassau Street, New York City.

Very respectfully,

Attorneys of Record.

THOMAS A. EDISON

APPARATUS FOR COATING PHONOGRAPH RECORDS

FILED JUNE 16, 1900

SERIAL NO. 20,556

ROOM NO. 149.

HON. COMMISSIONER OF PATENTS,

S I R :

In accordance with the Examiner's request, we amend by erasing claims 2, 3, 4 and 5, and substituting the following:-

-----2. Improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, a support for the object within said chamber, two electrodes in said chamber made of the metal to be deposited, said electrodes being placed diametrically of the support, and means for establishing between said electrodes a silent or brush electrical discharge, substantially as set forth.

3. Improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, a support for the object within said chamber, two electrodes in said chamber made of the metal to be deposited, said electrodes being placed diametrically of the support, means for establishing between said electrodes a silent or brush electrical discharge, and means for rotating said support, substantially as set forth.

4. Improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, a support for the object within said chamber, two electrodes within said chamber on opposite sides of said support, an induction

coil the secondary of which is connected to said electrodes, and means for energizing said induction coil for producing a silent or brush discharge between said electrodes, substantially as set forth.

5. Improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, a support for the object within said chamber, a pair of insulating standards within the chamber on opposite sides of said support, electrodes carried by said standards and made of the metal to be deposited, and means for establishing a silent or brush discharge between said electrodes, substantially as set forth.-----

Reconsideration of the case is respectfully requested.

In the first Boas patent, No. 82,247, the description is manifestly insufficient. It is true the second Boas patent, No. 65,435, in referring to the first patent as a part of the prior art states that the object is placed between the two electrodes, but the second patent refers to this arrangement as distinctly disadvantageous, and claims as an improvement the placing of the cathode between the anode and the object. Even if the references are considered in the aggregate, they do not show the employment of a silent or brush discharge, nor do they show the making of the two electrodes of the same metal, and finally they do not show the rotation of the object. In fact, the two Boas patents appear to be designed solely for the purpose of operating on mirrors, and do not show processes which could be satisfactorily used for coating phonograph records.

We hope that upon reconsideration the claims will be allowed.

Respectfully,
THOMAS A. EDISON,

By _____

New York, June 5, 1902.

His Attorney

2-260.

Room No. 145,
All communications should be addressed to
The Commissioner of Patents,
Washington, D. C.

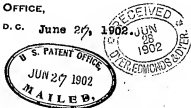
Pat. No. 7

All communications respecting this
application should give the serial number,
date of filing and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C. June 27, 1902.

Thos. A. Edison,
Care Dyer, Edmonds & Dyer,
31, Nassau St.,
New York,
N. Y.



Please find below a communication from the EXAMINER in charge of your application,
Apparatus for Coating Phonograph-Records &c.-; Filed June 16, 1900
No. 20,556.

R. I. Allen
Commissioner of Patents.

The specification and claims for this case are drawn in such broad terms as to include the working of metallic mirrors or similar articles by means of a brush or silent discharge, and the only difference set forth over the German patents of record when both are taken together, as publications, is that the phonogram or other object to be coated is rotated with the discharge chamber. Moreover, Moore, of record, shows that the device of rotating objects in a vacuum chamber by means of a rotating magnet is old and to use the same and to apply the silent discharge used by Boas in his later patent in to the apparatus used by Boas in his earlier patent, as disclosed in his later patent, would obviously be a mere double use. Each claim is rejected for this reason and on the reference of record.

It seems clear to the Examiner that the only invention disclosed in this case resides in the process, and such process being tacitly allowed in the pending case Number 20,555, applicant's rights are believed to be therein fully protected.

Case No. 1039.

Dropped

Filed June 16, 1900.

APPARATUS FOR COATING PHONOGRAPH RECORDS
AND OTHER ARTICLES.

CLAIMS.

1. An improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, and electrode of the metal to be deposited and a second electrode in said chamber, and means for establishing between said electrodes a silent or brush electrical discharge, substantially as set forth.
2. An improved apparatus for securing a coating of a metal on an object, consisting of an exhausted chamber in which the object to be coated is supported, an electrode of the metal to be deposited and a second electrode in said chamber, means for establishing between said electrodes a silent or brush electrical discharge, and means for rotating the object, substantially as set forth.
3. An improved apparatus for securing a coating of metal on an object, comprising an exhausted chamber containing the object to be coated, two electrodes in said chamber made of the metal to be deposited, said electrodes being placed diametrically of the object, and means for establishing between said electrodes a silent or brush electrical discharge, substantially as set forth.
4. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber containing the object to be coated, two electrodes in said chamber made of the metal to be deposited, said electrodes being placed diametrically of the object, means for establishing between said electrodes a silent or brush electrical discharge, and means for rotating the object, substantially as set forth.

5. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber, means within the chamber for securing a vacuous deposit on the object, means for supporting the object within the chamber, an armature connected to the object, a magnet on the outside of the chamber for attracting said armature, and means for rotating the magnet with respect to the chamber, substantially as set forth.

6. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber, two electrodes within said chamber on opposite sides of the object to be coated, an induction coil the secondary of which is connected to said electrodes, and means for energizing said induction coil for producing a silent or brush discharge between said electrodes, substantially as set forth.

7. An improved apparatus for securing a coating of a metal on an object, comprising an exhausted chamber containing the object to be coated, a pair of insulating supports within the chamber, electrodes carried by said supports and made of the metal to be deposited, and means for establishing a silent or brush discharge between said electrodes, substantially as set forth.

No. 2430Serial No. 33034C. 1047

Applicant.

Thomas A. Edison (41)Address. ✓

Title

Inpts. in Electric Motors

Filed

October 15, 1900.Examiner's Room No. 87

Assignee

Ass't Exec.

Recorded

Liber

Page

Patent No. 703051

Issued

June 24, 1902

ACTIONS.

- | | |
|----------------------------------|----|
| 1. <u>Accepted Nov 10/1900</u> | 16 |
| 2. <u>Amended Sept 11, 1901</u> | 17 |
| 3. <u>Accepted Sept 24-1901</u> | 18 |
| 4. <u>Amended May 1, 1902</u> | 19 |
| 5. <u>Allowed May 7, 1902</u> | 20 |
| 6. <u>J. J. F. and June 3/02</u> | 21 |
| 7. _____ | 22 |
| 8. _____ | 23 |
| 9. _____ | 24 |
| 10. _____ | 25 |
| 11. _____ | 26 |
| 12. _____ | 27 |
| 13. _____ | 28 |
| 14. _____ | 29 |
| 15. _____ | 30 |

DYER, EDMONDS & DYER,

31 Nassau Street,
NEW YORK CITY.

Richard Dwyer
Samuel Edwards
Frank L. Dwyer

if possible should make
another chain of iron wires
2 or more times the length
of the others



Thomas A. Edison, Esq.

Orange
New Jersey

Dear Sir:-

Law Offices

Dyer, Edmund

Specialty: Patents, Patent Counsel.

31 Nassau Street,

New York, May 23, 1902.

In view of all the information
furnished the claims made
if there are no new claims
that you can think of which
would strengthen the case then you
can let it go at that

Your favor of the 22nd instant has been received, returning the allowed claims in your application for electric meters filed October 15, 1900, and enclosing also a list of questions relating to the state of the art. We present your questions herewith, together with our answers to the same.

1st. Who was the first to use a scalebeam with the counter on the beam, in an electric meter?

Ans. Weston, patent No. 442,705, dated December 16, 1890 (copy enclosed). With the preferred construction, the register is stationary and is driven from a toothed wheel U through intermediate connections, but the patent states (p. 3, lines 92 et seq.) that--

"The decimal-registering dials . . . may be fastened to the lever C and partake of its movement."

We doubt if this bald suggestion of a modification is sufficiently definite, under the authorities, to convey an accurate explanation of the exact construction contemplated.

(T. A. E., 2)

Thomson, patent No. 463,558, dated November 17, 1891 (copy enclosed). This patent very clearly shows the construction of the question.

2nd. Who was the first to work such a beam by a solenoid with coil in series with the lamps?

Ans. Thomson, patent No. 463,558 above referred to.

3rd. Who was the first to use soft unmagnetized iron in such a solenoid?

Ans. We do not know of any patent showing the exact requirements of the question. Thomson shows everything except the special solenoid called for, Thomson's solenoid having a fine wire coil instead of a soft iron core.

Patent to Marks, No. 586,559, dated July 20, 1897 (copy enclosed) states that--

"In electrical meters and indicators it is the common practice to employ a coil which actuates a movable element made of soft iron and whose movement adjusts the indicator or recording device" (p. 1, lines 12 et seq.).

4th. Who was the first to wind a fine wire on such solenoid to produce an initial magnetism, such coil being across the line?

Ans. Your application of October 15th, 1900, and the construction is covered broadly in claim 16 and more specifically in other claims.

The Marks patent above referred to describes the employment of "an additional winding within the solenoid to pro-

(T. A. E., 3)

duce saturation or polarization of the core, or the extra winding may be placed directly upon the core, or both arrangements may be employed" (p. 1, lines 37 et seq.); but we understand that with your construction the auxiliary coil does not produce saturation of the core, and it was on account of this difference that your claims were allowed on this feature.

5th. Who was the first to wind the solenoid coils on a copper tube to retard the violence of the action of a short circuit on the beam?

Ans. Your application of October 15th, 1900, and the feature is covered generically in claim 6 and specifically in other claims.

6th. Who was the first to make double windings on the solenoid to permit of the use as a 3-wire meter?

Ans. Your application in question, the construction being covered by the eighth claim.

7th. Who was the first to employ the construction of the sixth question with an extra coil to give an initial magnetism to the core, such coil being across the line?

Ans. Your application of October 15th, 1900, in question, the two features being covered by claims 8 and 16, as above stated.

(T. A. E., 4)

8th. Who was the first to employ the construction of the seventh question with a soft iron core?

Ans. Your application of October 15th, 1900.

9th. Who was the first to use a hollow core or tube of soft iron in a meter solenoid?

Ans. Maxim, in patents Nos. 255,306 and 255,307 of March 21, 1882 (copies enclosed), shows a hollow core for a meter solenoid, but the patents do not specifically state that the core is made of soft iron. *He has a core within a C, in both his patents - Marks by Weston don't say "Vandy" in any way*

10th. Who was the first to overbalance the meter beam with a recorder on the beam?

Ans. Weston and Thomson before referred to.

11th. Who was the first to use a friction-driven wheel connected to a counter by power-transmitting mechanism, so that a rotation of the wheel advances the recorder?

Ans. Reckenzaun, patent No. 437,763, of October 7, 1890, shows this construction; also Edison patent No. 660,-293 of October 23rd, 1900 (copy enclosed).

12th. Who was the first to use the construction of the eleventh question, and to also have the wheel so arranged that it is free to lift when it comes in contact with an extraneous body in motion and produce traction for driving the wheel?

Ans. Edison, patent No. 660,293, above referred to.

(T. A. E., 5)

13th. Who was the first to use a revolving integrating wheel?

Ans. The patents to Maxim, to Reckenzaun, to Weston, to Thomson and to Edison (No. 660,293), all show this feature.

14th. Who was the first to drive an integrating wheel by a worm?

Ans. Maxim patents above considered.

15th. Who was the first to form such a wheel so that its surface shall at all points be of approximately the same radius or sweep of the traction wheel on the beam?

Ans. Thomson before considered.

16th. Who was the first to drive any kind of an integrating device by a motor across the line? *I mean a rotating motor with a friction governor*

Ans. Maxim patent No. 255,307. British patent to Varley and Greenwood, No. 2248 of 1882 (copy enclosed). See also Edison patent No. 660,293.

17th. Who was the first to drive any kind of an integrating device by a motor across the line with any device operated by a solenoid in series with the lights? *Motor with a friction governor continuously rotating motor*

Ans. Maxim, No. 255,307; Varley and Greenwood British patent No. 2248 of 1882; Edison, No. 660,293.

18th. Who first used a motor with a governor worked by friction run continuously and placed across the line?

*For use after
General
presented
OK in
Oct 29, 1903*

(T. A. E., 6)

Ans. Edison, No. 660,293, and covered broadly in claims 1 and 2.

19th. Who was the first to use the construction of the eighteenth question with the addition of a beam with the counter thereon and a solenoid in series and containing a soft iron core?

Ans. We know of nothing complying exactly with the requirements of this question, except the application of October 15th, 1900, under consideration.

Edison patent No. 660,293 shows a frictionally governed motor across the line, and patents to Thomson, to Weston and to Marks show the other features of the question.

20th. Who was the first to make a motor having a governor with pendulous governor arms engaging glass to provide the friction of retardation?

Ans. Application of October 15th, 1900, and covered in claim 12.

We beg to return the copy of allowed claims herewith, together with all the patents above referred to except that to Reckenzaun, with which we believe you are familiar, and shall be glad to have your views as to whether the claims are sufficient in your opinion. You will note that your patent No. 660,293 covers the broad claims on meters of this

(T. A. E., 7)

type, and the present application was filed only for the purpose of claiming details.

Yours very truly,

Alfred E. Edwards, Jr.

FLD/IM.

Enclosures.

THOMAS A. EDISON

ELECTRIC METERS

FILED OCTOBER 15, 1900

SERIAL NO. 33,034

CLAIMS ALLOWED.

1. In an electric meter, the combination with an overbalanced beam, a core connected to one end of said beam, a stationary coil surrounding said core and traversed by the current to be measured, a register connected to and movable with the beam, and a friction wheel movable with the beam and connected with said register, *of a cam with which said friction wheel periodically cooperates, and an electric motor connected across the line for rotating said cam at a constant speed, substantially as set forth.*

2. In an electric meter, the combination with an overbalanced beam, a core connected to one end of said beam, a stationary coil surrounding said core and traversed by the current to be measured, a register connected to and movable with the beam, and a friction wheel movable with the beam and connected with said register, *of a cam with which said friction wheel periodically cooperates, an electric motor connected across the line for rotating said cam at a constant speed, and an auxiliary coil of high resistance surrounding the core for overcoming magnetic inertia without producing saturation or polarization thereof, substantially as set forth.*

3. In an electric meter, the combination with an overbalanced beam, a core connected to one end of said beam, a stationary coil surrounding said core and traversed by the

current to be measured, a register connected to and movable with the beam, and a friction wheel movable with the beam and connected with said register, of a cam with which said friction wheel periodically cooperates, an electric motor connected across the line for rotating said cam at a constant speed, and an auxiliary coil of high resistance surrounding the core for overcoming magnetic inertia without producing saturation or polarization thereof, said core being in series with the motor, substantially as set forth.

4. In an electric meter, the combination with a beam, a current indicator for moving said beam, a magnetic cutout in series with the current indicator for short-circuiting the latter when a destructive current traverses the cutout, and a register connected to and movable with the beam, of a variable speed gearing, one element of which is movable with the register, and a motor for operating the other element of said gearing, substantially as and for the purposes set forth.

5. In an electric meter, the combination with a current indicator having a movable element, a beam to which said element is connected, elastic buffers for limiting the extreme movements of said element, and a register, of a variable speed gearing the position of whose elements is determined by the position of said beam, and a motor for driving the register through said variable speed gearing, substantially as set forth.

6. In an electric meter, the combination with a beam, a core connected to one end of said beam, a copper tube surrounding said core and in which the core is freely movable, an ampere coil wound on the tube and traversed by the current to be measured, and a register, of a variable speed gearing the position of whose elements is determined

by the position of said beam, and a motor for driving the register through said variable speed gearing, substantially as set forth.

7. In an electric meter, the combination with a beam, a core connected to one end of said beam, a copper tube surrounding said core and in which the core is freely movable, an ampere coil wound on the tube and traversed by the current to be measured, elastic buffers for limiting the extreme movements of said core, and a register, of a variable speed gearing the position of whose elements is determined by the position of said beam, and a motor for driving the register through said variable speed gearing, substantially as set forth.

8. In a three-wire meter, the combination with a beam, a core connected to one end of said beam, a copper tube surrounding said core and within which the core is freely movable, four ampere coils wound helically and concentrically upon said tube, the outer and inner coils being connected in series with one of the outside mains and the two inner coils being connected in series with the other outside main, and a register, of a variable speed gearing the position of whose elements is determined by the position of said beam, and a motor for driving said register through said variable speed gearing, substantially as set forth.

9. In an electric meter, the combination with a beam, a core connected to one end of said beam, an ampere coil surrounding the core and traversed by the current to be measured, and a register, of a variable speed gearing the position of whose elements is determined by the position of said beam, a motor for driving said register through said variable speed gearing, and an auxiliary coil enclosing the core for overcoming the magnetic inertia thereof without producing saturation or polarization, substantially as set

forth.

10. In an electric meter, the combination with a beam, a core connected to one end of said beam, an ampere coil surrounding the core and traversed by the current to be measured, and a register, of a variable speed gearing the position of whose elements is determined by the position of said beam, a motor for driving said register through said variable speed gearing, and a stationary auxiliary coil enclosing the core and in series with said motor, substantially as set forth.

11. In an electric meter, the combination with a beam, an ampere indicator the movable element of which is connected with said beam, said indicator including a coil traversed by the current to be measured, a register, and a motor for operating said register, of a magnetic cutout arranged to close a shunt around the ampere coil when said cutout is influenced by an abnormal current, substantially as set forth.

12. In an electric meter, the combination with a register, an ampere indicator, and a variable speed gearing the position of whose elements is determined by said indicator, of a constant speed motor for driving the register through the variable speed gearing, and a centrifugal speed regulator for said motor employing a weighted bell-crank carrying a friction pad which cooperates with a glass friction surface, substantially as set forth.

13. In an electric meter, the combination with a register and a driving motor, of an ampere indicator comprising a beam, a core connected to one end of said beam, a coil for influencing the core traversed by the current to be measured, and a copper tube on which the coil is wound and in which the core is freely movable, substantially as set forth.

14. In an electric meter, the combination with a register and a driving motor, of an ampere indicator comprising a beam, a core connected to one end of said beam, a coil for influencing the core traversed by the current to be measured, a copper tube on which the coil is wound and in which the core is freely movable, and elastic buffers for limiting the extreme movements of said core, substantially as set forth.

15. In an electric meter, the combination with a register and a driving motor, of an ampere indicator comprising a beam, a core connected to one end of said beam, a coil for influencing the core traversed by the current to be measured, a magnetic cutout in circuit with said coil for shunting the same when a destructive current is traversing the coil, and a copper tube on which the coil is wound and in which the core is freely movable, substantially as set forth.

16. In an electric meter, the combination with a register and a motor for operating the same, of an ampere indicator comprising a coil, a core, and an auxiliary coil for subjecting the core to an initial magnetizing effect without producing polarization or saturation thereof, substantially as set forth.

No. 2452C. No. 1050Serial No. 41373

Applicant.

Thomas A. Edison

Address.

Llewellyn Park,Orange,New Jersey.

Title

Reversible Galvanic Batteries

Filed

December 28, 1900

Examiner's Room No.

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Assignee

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Page

Patent No.

Issued

ACTIONS.

1 Rejected Jan'y 17, 1901

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2 Abandoned Mch. 1, 1901.

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DYER, EDMONDS & DYER,

31 Nassau Street,

NEW YORK CITY.

LAW OFFICES
OF
DYER, EDMONDS & DYER.
SPECIALTY:
Patents and Patent Causes,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 409.
SAMUEL O. EDMONDS,
REGISTRATION NO. 411.
FRANK L. DYER,
REGISTRATION NO. 410.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER **THOMAS A. EDISON**, a citizen of the United States, residing and having his Post Office address at Llewellyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT IN
REVERSIBLE GALVANIC BATTERIES

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

Thomas A. Edison

SPECIFICATION.

TO WHOM IT MAY CONCERN:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN REVERSIBLE GALVANIC BATTERIES (case No. 1080), of which the following is a description:

My invention relates to improvements in reversible or so-called storage batteries, and my object is to produce a reversible galvanic cell of great permanency and of remarkably light weight per unit of energy.

In my application for Letters Patent filed October 31st 1900 Serial No. 34,994, I describe an improved reversible galvanic cell wherein the metals cadmium and copper are employed as the elements in an alkaline electrolyte, and by means of which I secured a very permanent cell, one wherein the initial and final states of the electrolyte are the same, and finally one which ~~up to that time~~ ^{commercially used before that time,} was capable of storing a greater amount of energy per pound of cell than batteries ~~heretofore suggested.~~

My present invention is designed to further lighten the weight of the cell in comparison to the stored energy, and to deliver the energy to the exterior circuit at a higher rate.

In the alkaline zincate type of battery, ^{as commercially used} so far as I know, copper oxide has heretofore been used exclusively as the oxygen-furnishing element when the battery is discharged, the copper being reduced to the metallic state. The only other elements which have been suggested ^{and used for} as available as substitutes for copper in these batteries, have been those lower in the electrolytic series, such as mercury and sil-

ver, but so far as I know, these metals have not been satisfactorily or commercially utilized on account of the difficulties arising from their application in alkaline electrolytes as well as because of their expense, especially in regard to silver, which metal possesses the further disadvantage of being partially soluble in the electrolyte, ^{quite} ~~when subjected to oxidation.~~ I have sought, by a great many experiments, for an element or compound capable of being used in an alkaline electrolyte, whose heat of formation of its oxide should be as low or lower than that of mercury, and in this I have been successful, the result being the discovery of an element for furnishing the oxygen to the oxidizable element on discharge with even greater freedom than oxide of mercury, while at the same time the new element is less expensive, is of less weight, is of greater permanency, and finally is of greater insolubility in the electrolyte. I have also sought, by experiment, for an element superior to cadmium as the oxidizable element on discharge, with the objects in view of further reducing the weight and cost of the cell, and I have discovered an element for the purpose possessing these desirable characteristics. As a result, a reversible galvanic cell equipped with the new elements is of great permanence, is relatively light and inexpensive, and is of great power. These elements are, as stated, preferably used in the same cell, but obviously the oxygen-furnishing element may be employed in connection with other oxidizable elements, while the new oxidizable element may be employed in connection with other oxygen-furnishing elements:

The elements are also preferably carried or supported by hollow perforated plates, forming receptacles or pockets, which are illustrated in the accompanying draw-

ings forming part of this specification and in which figure 1 is a face view of one of the plates having three pockets or receptacles, showing the front wall partly broken away; figure 2 is a section on the line 2--2 of figure 1; figure 3 is a plan, showing two of the plates forming a single combination; and figure 4 an enlarged detailed section.

In all of the above views, corresponding parts are represented by the same numerals of reference.

Each plate is formed with two walls 1 and 2 constructed preferably of a single continuous sheet made preferably of very thin sheet nickel, say about .005 of an inch in thickness, and bent at its bottom around a horizontal frame 3 from which extends the vertical spacing frames 4, 4, to all of which frames the sheet is secured by means of nickel rivets, as shown, to form a strong, rigid, hollow plate with pockets or receptacles between the vertical frames 4, 4. The walls 1 and 2 of the plate, as shown, are perforated with small holes arranged very closely together and each about .015 of an inch in diameter. I prefer to use nickel in the construction of the plates, since that metal is not oxidizable by electric oxidation in an alkaline solution. Iron, on the other hand, is slightly oxidized under these conditions and is not so desirable, but if very carefully and perfectly plated with nickel, it may be used satisfactorily for the construction of either the plates or the frames. Obviously the frames 3 and 4 may be, and in some instances preferably are, constructed of hard rubber or other inert material, to which the perforated sheet is riveted, as explained. Secured to one or both of the sides of the plate are a number of insulated spacing blocks 5, 5, to prevent adjacent plates from touching when immersed in the electrolyte.

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In the manufacture of my new oxidizable element for use in a reversible galvanic cell, I first preferably take monosulphide of iron and reduce it by a crushing operation until the particles thereof may be passed through a screen having about 4,000 openings per square inch, and I intimately mix about eight parts by weight of the powdered monosulphide with about two parts by weight of flake graphite of a size considerably larger than the perforations in the walls of the pockets or receptacles. ^A This mixture is then moistened with a twenty-percent solution of potassic hydroxide, and the dampened mass is packed into the pockets or receptacles of the proper plates by a suitable tamping tool. ^B After each pocket or receptacle has been tightly packed with the mass almost to its top, a wad of asbestos fiber 6 about a quarter of an inch in thickness is introduced into the pocket or receptacle above the mass, and on top of this packing is placed a strip of sheet nickel 7 entirely covering the asbestos and filling the mouth of the pocket, which strip is permanently secured in position by nickel wires 8 threaded through the openings near the top of the pocket, as shown particularly in figure 2. The element thus formed is subjected to electrolytic oxidization in a solution of potassic hydroxide, whereby sulphur will be set free and combining with the alkali forms a sulphide of potassium which diffuses out of the mass, while the iron is converted to ^{ferrous} oxide thereof. This diffusion of the alkaline sulphide out of the plate is hastened and facilitated by subjecting the contents of the plate to alternate oxidization and reduction by alternately reversing the oxidizing current, and by several of these operations the whole of the sulphur will be eliminated and the element will be ready for use after the iron has been reduced to the metallic

determined only after a few trials - after much

state. Since iron does not decompose water, there will obviously be no local action between it and the graphite. The oxide formed from the sulphide increases in bulk, and being intermediately mixed with the graphite, produces considerable pressure on the walls of the plate, which prevents any disturbance of the initial state of the mass even when it is subjected to strong gassing within the pores by overcharging the element electrically. The object of using the monosulphide is to secure the greatest amount of iron oxide in the smallest space and in a form capable of being reduced to the metallic state electrolytically.

My attempts to utilize iron as the oxidizable element in an alkaline reversible battery were for a long time ~~frustrated by the facts that dried oxides of iron were not reducible to any extent by the current; that spongy iron reduced by hydrogen from different iron salts was not oxidizable to any considerable extent by the current; that the hydrates of iron were very bulky and difficult of use without drying, which operation effected some obscure change therein to render them nearly inert in the presence of the reducing current; that bulky ferric oxide was not capable of any considerable reduction by the current; and finally that ferrous oxide was very difficult to prepare on account of atmospheric oxidation.~~ ^{though, possibly possible to} The formation of the oxide in the first instance within the pockets or receptacles did away with the objections due to the bulk of the hydrates, while the oxide thus formed is perfectly reducible by the current. Instead of forming the oxide in this way by oxidizing the monosulphide in an alkaline solution, it will be obvious that salts of iron, like ferrous chloride, may be packed with the graphite and when placed in an alkaline solution form chloride of the alkali and oxide of iron, ^{ferrous}

the alkaline chloride diffusing out of the mass. The results, however, are not so good as when the sulphide of iron is used, since the quantity of finely divided iron produced thereby is considerably less and is also less porous, offering therefore a reduced opportunity for the solution to penetrate the mass, and lowering in consequence its current-conducting capacity. Metallic iron, even when finely divided as produced by electrolytic reduction, does not of itself oxidize in solutions of the fixed alkalies, and the oxide of iron is not appreciably soluble. Compact, ^{dense, or non-porous} iron, i.e. iron having relatively large particles, when ^{subjected to a powerful} subjected to electrolytic oxidation, forms a soluble ferrate of the alkali and dissolves in the electrolyte. On the other hand, finely divided iron obtained as described, when subjected to electrolytic oxidation, does not form a soluble ferrate but is converted into the insoluble ferrous oxide. My improved oxidizable element is therefore absolutely permanent, so that in the operation of the battery, the electrolyte ^{is not changed at any stage of the working,} ~~and absolutely no deterioration of the Brown element takes place~~. Having described the advantages and characteristics of, and the preferred manner of making, the oxidizable element, reference will now be made to the preferred oxygen-furnishing or storing element of the cell.

I have discovered by experiment that the lower oxides of nickel and cobalt, when in contact with a conductor in an alkaline solution, can be almost wholly raised from the lower to a higher stage of oxidation electrolytically and that these higher oxides revert to ^a the lower stage by reduction with extreme ease, and availing myself of this fact, I have constructed an oxygen-storing element capable of greater capacity, of less weight, and of higher permanence than any electrode for the purpose which, so far

as I know, has heretofore been applied. Neither the oxide of nickel nor of cobalt is appreciably soluble in an alkaline electrolyte, and both nickel and cobalt give nearly the same voltage in use, but since nickel is less expensive than cobalt, I prefer to use the former element for the purpose.

C The preferred process of making the oxygen-storing element consists in first precipitating the hydrated oxide of the metal, say nickel, spreading the fresh precipitate on plates, and slowly drying the same at ordinary temperatures. The dried hydrate is then powdered, and screened through a sieve having, say, 4,000 holes per square inch. About seven parts by weight of the finely powdered hydrate and three parts by weight of flake graphite are then intimately mixed, and moistened with a small quantity of a strong solution of potassic hydroxide so as to dampen the mass, which is then inserted in the pockets or receptacles of the proper plates in small quantities at a time and thoroughly tamped at each accession. Finally the mass is covered with a layer of asbestos, held in place by a plate of nickel secured in position by nickel wires, as I have described in explaining the makeup of the oxidizable element. The plates, the pockets of which are thus supplied with the mixture of the hydrated oxide and graphite, are then immersed in a solution of potassic hydroxide in water and subjected for a considerable time to an oxidizing current of about fifty milamperes per square inch of surface, thereby resulting in the conversion of the mixed oxide to a higher oxide, whereupon the element is ready for use.

The object of employing graphite, which is not affected by electrolytic oxidation, is to offer a great extent of surface against which the whole of the oxide is in

contact, a large conducting surface being necessary since the electrolytic reduction and oxidation for practical purposes only extend a small distance from the conducting surface against which the oxide is in contact. This is admirably effected by the use of graphite in its micaceous form, the proportions indicated being such as to practically insure that the electrolytic action need not penetrate a greater distance from the contact surface than the thickness of a single particle of the oxide. Furthermore, there is no local action between the nickel or cobalt oxides and the graphite.

The reason why nickel hydrate is preferably used instead of other compounds of nickel, is that the metal itself when finely divided (as obtained by reducing a nickel compound by hydrogen or electrolysis), is not oxidizable to any considerable extent when subjected to electrolytic oxidation in an alkaline solution, and it is probably due to this fact that the availability of nickel and cobalt as the oxygen-storing element in an alkaline electrolyte has not been recognized. The sulphide of nickel is not decomposed by electrolysis under the conditions of battery work, and the sulphide of cobalt only imperfectly; hence the hydrates are the most available compounds for use, since they do not become inert to the same extent as hydrates of the oxides of iron after drying, they are easily prepared, and by absorbing the solution they swell within the pockets or receptacles so as to insure intimate contact and stability.

Having thus constructed the two elements of the battery, they are preferably utilized together in a solution of twenty-five percent of potassic hydroxide in water, and the cell is ready for use, *the wires being in metallic form and the oxides of nickel and cobalt in contact with the solution.* Owing to several obscure reactions which take place

when the battery is discharged, and also to a change of resistance within the electrodes, the voltage is variable, but the average voltage over the whole discharge is about 1 volt, rising as high as 1.32 volts and sometimes higher when freshly charged.

My improved battery can be over-charged, fully discharged, or even reversed and charged in the opposite direction without any injury. Over-gassing does not disturb the initial state of the materials in the pockets, all the ingredients are insoluble, the plates are unattacked by electrolytic oxidation, and the whole operation is independent of the strength of the solution, so that the battery is of great permanence, while at the same time more energy will be stored per unit of weight than with any practical combination heretofore suggested. *21*

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. In a reversible galvanic battery, one element (or pole) employing iron as the active material and the other element (or pole) employing oxide of nickel or cobalt as the active material, substantially as set forth.

2. In a reversible galvanic battery employing an alkaline electrolyte, one element (or pole) employing iron as the active material and the other element (or pole) employing oxide of nickel or cobalt as the active material, substantially as set forth.

3. In a reversible galvanic battery, an active element therefor containing the oxides of nickel or cobalt, substantially as set forth.

4. In a reversible galvanic battery employing an alkaline electrolyte, an active element therefor containing the oxides of nickel or cobalt, substantially as set forth.

5. In a reversible galvanic battery, an active element therefor containing finely divided iron, substantially as set forth.

6. In a reversible galvanic battery employing an alkaline electrolyte, an active element therefor containing finely divided iron, ^{electrolytically active} substantially as set forth.

7. In a reversible galvanic cell containing an alkaline electrolyte, an active element therefor containing an iron compound reducible ~~(by reduction)~~ to the metallic state ~~(and formed in situ by electrolytically acting upon the iron compound not decomposable by the alkali of the electrolyte)~~ substantially as set forth.

8. In a reversible galvanic cell, a perforated metallic pocket containing an active material under pressure, substantially as set forth.

9. In a reversible galvanic cell, a perforated nickel pocket containing an active material under pressure, substantially as set forth.

10. In a reversible galvanic cell, a perforated metallic pocket containing an active material, and a separate closing device for covering the opening to the pocket after the material is introduced therein, substantially as set forth.

11. In a reversible galvanic cell employing an alkaline electrolyte, an active material therefor mixed with graphite for making contact therewith, substantially as set forth.

12. In a reversible galvanic cell containing an alkaline electrolyte, an active element employing an oxide of nickel or cobalt ^{nickel or cobalt} and graphite for making contact with the oxide, substantially as set forth.

13. In a reversible galvanic cell employing an

alkaline electrolyte, an active element comprising finely divided iron (or its oxide) and graphite for making contact therewith, substantially as set forth.

14. In a reversible galvanic cell employing an alkaline electrolyte, a perforated metallic pocket, and an active material rigidly secured therein so as not to be disturbed when subjected to electrolysis, substantially as set forth.

15. In a reversible galvanic cell, the formation of ferrous oxide from iron compounds by electrolytic action within the liquid, substantially as set forth.

16. In a reversible galvanic cell, the formation of ferrous oxide from sulphide of iron by electrolytic action within the liquid, substantially as set forth.

17. In a reversible galvanic cell, the formation of ferrous oxide within the element by precipitating the oxide from a ferrous salt by the action of an alkali, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS 21st DAY OF December, 1900

Thomas A. Edison

Witnesses:

1. Frank L. Dyer
2. Rich. H. Dyer

Oath.

State of New Jersey } ss.:
County of Essex

THOMAS A. EDISON

, THE ABOVE-NAMED

PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States and a resident of Mewelllyn Park, in the
County of Essex and State of New Jersey;
THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN REVERSIBLE GALVANIC BATTERIES;

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

SWORN TO AND SUBSCRIBED BEFORE ME THIS 21st DAY OF December, 1900

Thomas A. Edison

Rich. H. Dyer

NOTARY PUBLIC.

(SEAL)

2-161.

All communications should be addressed to
"The Commissioner of Patents,
Washington, D. C."

DEPARTMENT OF THE INTERIOR,

United States Patent Office,

Washington, D. C., Dec 28, 1900.

SERIES OF 1900.
No. 41373



SIR:

I have to acknowledge the receipt of the petition, specification, oath, and drawing of your alleged improvement in

Reversible Galvanic Batteries

with Fifteen Dollars as the first fee payable thereon.

The papers are duly filed, and your application for a patent will be taken up for examination in its order

You will be duly advised of the examination.

Very respectfully,

... will be taken up for examination in about / months.

C. H. Driell
Commissioner of Patents.

J. A. Edmon

of J. Edgar, Edmonds & Dyar

31 Nassau St

N. Y. City

NOTE.—In order to constitute an application for a patent, the inventor is by law required to furnish the petition, specification, oath, and drawings (where the nature of the case admits of drawings) and to pay the required fee.
No application is considered as complete, nor can any official action be had thereon, until all its parts, as here specified, are furnished in due form by the inventor or applicant.

Any communication respecting this application should give the serial number, date of filing, and title of invention.

RECEIVED DEC 31 1900 DEPT. OF THE INTERIOR

2-246.

Room No. 145
All communications should be addressed to
The Commissioner of Patents,
Washington, D. C.

All communications respecting this
application should give the serial number,
date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

WASHINGTON, D. C.,



Jan. 17, 1901

Thomas A. Edison,
Care Dyer, Edmonds & Dyer,
31 Nassau St.,
New York, N. Y.



Please find below a communication from the EXAMINER in charge of your application.

No. 41,373, filed Dec. 28, 1900,—"Reversible Galvanic Batteries".

C. H. Duell
Commissioner of Patents.

It is requested that some evidence be furnished to substantiate the statement made in lines 14, 15, 16 and 17, page 5, first that dried oxides of iron are not reducible to any extent by the current, and, second, that spongy iron reduced by hydrogen is not oxidizable to any considerable extent by the current. The last statement is apparently contradictory to that made in lines 11, 12 of page 6, in which it is stated that compact iron when subjected to forced electrolytic oxidation forms a soluble ferrate, etc. *note*

The words "dried hydrate" in line 11, page 7, are objected to for the reason that when the hydrate of nickel is dried it is no longer a hydrate; it is then an oxide; see Watt's "Dictionary of Chemistry", London, 1866, Vol. 4, p. 41, li. 9. *note*

The statement contained at the top of page 8 that when a mass of oxide is employed the electrolytic reduction and oxidation will extend only a small distance from the conducting surface, is not thought to be strictly correct, for the reason that in the ordinary De Lelande type of cell the reduction of copper oxide will extend to the center of the depolarizer. *note*

It is requested that some evidence be furnished to substantiate the statement made in lines 14-16, page 8, that finely divided reduced nickel is not oxidizable to any considerable extent when subjected to oxidation in an alkaline solution. *note*

The word "plates" as used in line 10, page 9 is indefinite in that it is not clear whether it refers to the holder or the complete electrode. *note*

RULE 73. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the erasure or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper.

In every application for a patent filed subsequent to December 31, 1897, responsive action must be made by the inventor within one year after the last office action or the case will become abandoned.

It is requested that a working cell be furnished in order that the effect of the caustic solution on finely divided iron may be determined and also to determine whether more energy will be stored per unit of weight in applicant's cell than in any other combination heretofore suggested, as stated in lines 14, 15, 16, page 9. *at*
Int

The words "or pole" should be canceled from claims 1, 2. Claims 1, 2, 3, 4, 12 are objected to as being alternative in the words "nickel or cobalt".

Claims 2, 4, 6, 7, 11, 12, 13, 14, are objected to as being indirect in that the alkaline electrolyte referred to has not been made a positive element of the claims.

It is suggested that the words "by reduction" be canceled from line 3 of claim 7. The last three lines of claim 7 are objected to for the reason that they refer to the manner of manufacture; the article should be defined by a statement of its structure.

Claim 13 is objected to as being alternative in the words "finely divided iron or its oxide", since these are not equivalents.

Claims 15, 16 are objected to as being indirect in that the liquid referred to in line 3 has not been positively included.

The claims in this case are considered to cover four different inventions: (1) the battery covered by claims 1, 2, 3, 4, 5, 6, 7, 11, 12, 13; (2) the metallic pocket for containing active material, which may be employed in various cells, covered by claims 6, 9, 10, 14; (3) the process of making ferrous oxide covered by claims 15 and 16, and, (4) the process of making ferrous oxide, covered by claim 17. In advance of further action upon the merits the claims should be limited to a single invention.

Claims 1, 2, 3, 4, are each rejected upon:
U. S. 274,110, Mar. 20, 1883, De Lelande, et al., (Batt., 1-fl., Zn., Oxides),

see line 30, page 1, taken in connection with:
British 15,370, July 26, 1889, Michelowski, (Batt., Sec.).

Claims 5, 6, 7 are each rejected upon DeLelande, above cited.

Claims 8, 9, 10, 14, are each rejected upon:
British 7892, Apr. 14, 1899, Jungner, (Batt., Sec.),
taken in connection with:

U. S. 533,078, Jan. 29, 1890, O'Toole, (Batt., 1-fl., Zn., Oxides).

Claim 11 is rejected upon DeLelande, above cited; see line 59, page 1. Carbon is considered to be the equivalent of graphite in this connection. It is further rejected upon:

U. S. 344,957, July 6, 1886, Parbaky, (Batt., Sec.);

U. S. 585,699, July 6, 1897, Pullen, (Batt., 1-fl., Zn., Oxides).

Claim 12 is rejected upon the references cited against claim 11, taken in connection with Michelowski, above cited, and:
German 38,363, Dun, (Batt., 1-fl., Zn., Oxides).

Action upon the merits of claims 15, 16 and 17 is suspended.

THOMAS A. EDISON
REVERSIBLE GALVANIC BATTERIES
FILED DECEMBER 28, 1900
SERIAL NO. ⁴¹³⁷³~~41372~~

HONORABLE COMMISSIONER OF PATENTS:

I hereby abandon the above entitled application
(without relinquishing any rights in and to the invention
described therein) in favor of two applications embodying
the same invention and executed on even date herewith, said
applications being numbered in my series of cases 1055 and
1056 respectively.

Very respectfully,

Signed at Orange, New Jersey,
February 23rd 1901,
In presence of

Frank L. Lyon
John R. Taylor

Thomas A. Edison

Case No. 1050

Abandoned

Filed December 28, 1900.

REVERSIBLE GALVANIC BATTERIES.

Claims

1. In a reversible galvanic battery, one element or pole employing iron as the active material and the other element or pole employing oxide of nickel or cobalt as the active material, substantially as set forth.
2. In a reversible galvanic battery employing an alkaline electrolyte, one element or pole employing iron as the active material and the other element or pole employing oxide of nickel or cobalt as the active material, substantially as set forth.
3. In a reversible galvanic battery, and active element therefor containing the oxides of nickel or cobalt, substantially as set forth.
4. In a reversible galvanic battery employing an alkaline electrolyte, an active element therefor containing the oxides of nickel or cobalt, substantially as set forth.
5. In a reversible galvanic battery, an active element therefor containing finely divided iron, substantially as set forth.
6. In a reversible galvanic battery employing an alkaline electrolyte, an active element therefor containing finely divided iron, substantially as set forth.
7. In a reversible galvanic cell containing an alkaline electrolyte, an active element therefor containing an iron compound reducible by reduction of the metallic state and formed in situ by electrolytically acting upon the iron compound not decomposable by the alkali of the

electrolyte, substantially as set forth.

8. In a reversible galvanic cell, a perforated metallic pocket containing an active material under pressure, substantially as set forth.

9. In a reversible galvanic cell, a perforated nickel pocket containing an active material under pressure, substantially as set forth.

10. In a reversible galvanic cell, a perforated metallic pocket containing an active material, and a separate closing device for covering the opening to the pocket after the material is introduced therein, substantially as set forth.

11. In a reversible galvanic cell employing an alkaline electrolyte, an active material therefor mixed with graphite for making contact therewith, substantially as set forth.

12. In a reversible galvanic cell containing an alkaline electrolyte, an active element employing an oxide of nickel or cobalt and graphite for making contact with the oxide, substantially as set forth.

13. In a reversible galvanic cell employing an alkaline electrolyte, an active element comprising finely divided iron or its oxide and graphite for making contact therewith, substantially as set forth.

14. In a reversible galvanic cell employing an alkaline electrolyte, a perforated metallic pocket, and an active material rigidly secured therein so as not to be disturbed when subjected to electrolysis, substantially as set forth.

15. In a reversible galvanic cell, the formation of ferrous oxide from iron compounds by electrolytic action within the liquid, substantially as set forth.

16. In a reversible galvanic cell, the formation of ferrous oxide from sulphide of iron by electrolytic action within the liquid, substantially as set forth.

17. In a reversible galvanic cell, the formation of ferrous oxide within the element by precipitating the oxide from a ferrous salt by the action of an alkali, substantially as set forth.

No. 2469

Serial No. _____

E 1052

Applicant.

Address. ✓

Thomas A. Edison

Title

Infto, in Storage Battery

Filed _____

Examiner's Room No. _____

Assignee _____

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ACTIONS.

1	_____	16	_____
2	_____	17	_____
3	_____	18	_____
4	_____	19	_____
5	_____	20	_____
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12	_____	27	_____
13	_____	28	_____
14	_____	29	_____
15	_____	30	_____

DYER, EDMONDS & DYER,

31 Nassau Street,

NEW YORK CITY.

LAW OFFICES
OF
DYER, EDMONDS & DYER,
SPECIALISTS
Patents and Patent Litigation,
31 NASSAU ST., NEW YORK.

RICHARD N. DYER,
REGISTRATION NO. 499.
SAMUEL O. EDMONDS,
REGISTRATION NO. 491.
FRANK L. DYER,
REGISTRATION NO. 220.

Petition.

To the Commissioner of Patents:

YOUR PETITIONER THOMAS A. EDISON, a citizen of the United States, residing and having his postoffice address at Hewelllyn Park, in the County of Essex and State of New Jersey,

PRAYS THAT LETTERS PATENT MAY BE GRANTED TO HIM FOR THE IMPROVEMENT IN
STORAGE BATTERIES

SET FORTH IN THE ANNEXED SPECIFICATION; AND HE HEREBY APPOINTS DYER, EDMONDS AND DYER (A FIRM COMPOSED OF RICHARD N. DYER, SAMUEL O. EDMONDS AND FRANK L. DYER), OF NO. 31 NASSAU STREET, NEW YORK CITY, HIS ATTORNEYS, WITH FULL POWER OF SUBSTITUTION AND REVOCATION, TO PROSECUTE THIS APPLICATION, TO MAKE ALTERATIONS AND AMENDMENTS THEREIN, TO RECEIVE THE PATENT, AND TO TRANSACT ALL BUSINESS IN THE PATENT OFFICE CONNECTED THEREWITH.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that J. THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the County of Essex and State of New Jersey, have invented a certain new and useful IMPROVEMENT IN STORAGE BATTERIES, of which the following is a specification:-

In my application for patent filed December 28, 1900, Serial No. 41,373, I describe an improved storage battery wherein the active materials are carried in perforated pockets or receptacles, one of the active materials being nickel or cobalt oxide, and the other active material being finely divided iron, each of the active materials being mixed with flake graphite to form an electrically conducting mass. In describing the manufacture of my improved battery plates, I stated that the active materials, whether in their ultimate form or not, were introduced into the perforated pockets or receptacles in small portions at a time and suitably tamped at each accession. It is desirable that as much of the active material as possible should be introduced into each pocket, in order that the capacity of the battery may be increased and conductivity between the particles improved.

The object of my present invention is to facilitate this result, and to this end the invention consists of loading the pockets or receptacles forming the positive and negative elements of the battery with compressed plates of the active material formed by subjecting the proper quantity of such active material to great pressure, say about seven thousand pounds per square inch, and by then inserting such compressed plates into the perforated pockets or receptacles.

In this way the amount of material which can be inserted in the pockets or receptacles is greatly increased, and since the internal contact between the particles is improved, a greater amount of active material becomes effective.

In constructing the plates for the oxygen-storing element, either nickel or cobalt hydrate is preferably used, which having been dried and finely powdered is mixed in the proportions of about seven parts of hydrate to three parts of flake graphite. This mixture is then subjected to great pressure and is molded into plates having the width and thickness to closely fit within the pockets or receptacles. When the pockets or receptacles are relatively long, as is preferable, a number of these plates are inserted one above the other, to completely fill each pocket. When the pocket or receptacle having thus been filled is placed in the solution, the material of the plate by absorption swells considerably, so as to place the material under pressure against the walls of the pocket, which pressure is always present in operation, to thereby afford a good contact between the active material and the pocket and also internally between the particles of active material.

In the manufacture of the oxidizable element, iron sulphide is preferably first finely ground and then mixed with flake graphite, the whole being slightly moistened with strong caustic potash, and the mass thus formed is compressed under great pressure into plates of the desired size and inserted in the pockets or receptacles.

While I prefer to make use of nickel or cobalt as the oxygen-storing element and of iron as the oxidizable element of the storage battery, it will be understood that other active materials suitable for the purpose may be first compressed into plates or blocks and inserted in position

in perforated pockets or receptacles in manufacture.

In order that the improvement may be better understood, attention is directed to the accompanying drawings, forming part of this specification, and in which figure 1 is an elevation, partly in section, of a battery plate having three pockets or receptacles therein, as I describe in my said application, and figure 2 a separate perspective view of one of the molded or compressed blocks of active material.

In figure 1, the plate is made of thin nickel sheets, numerously perforated and bent around a bottom frame a to form parallel walls b and c. The plate is secured also to vertical frames d by means of nickel rivets, whereby a series of vertically long, narrow pockets will be formed between said vertical frames. Into these pockets are inserted blocks e of active material compressed under very heavy pressure as explained, and which by immersion in the solution are caused to swell so as to tightly engage the walls of the pockets.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:-

1. In a storage battery, an active material formed into compressed plates or blocks and inserted in perforated pockets or receptacles, substantially as set forth.
2. In a storage battery, nickel or cobalt compounds formed into compressed blocks or plates and inserted in perforated pockets or receptacles, substantially as set forth.
3. In a storage battery, an active element mixed with graphite and formed into compressed plates or blocks inserted into perforated pockets or receptacles, substantially as set forth.

4. In a storage battery, an active element comprising nickel or cobalt compounds and flake graphite, formed into compressed plates or blocks and inserted in perforated pockets or receptacles, substantially as set forth.

5. In a storage battery, an active element comprising an iron compound formed into compressed plates or blocks and inserted in a perforated pocket or receptacle, substantially as set forth.

6. In a storage battery, an active material comprising a mixture of an iron compound and flake graphite formed into compressed plates or blocks and inserted in a perforated pocket or receptacle, substantially as set forth.

THIS SPECIFICATION SIGNED AND WITNESSED THIS

DAY OF

190

Witnesses:

1. _____

2. _____

Oath.

State of

County of

} ss.:

THOMAS A. EDISON, THE ABOVE-NAMED
PETITIONER, BEING DULY SWORN, DEPOSES AND SAYS THAT HE IS A citizen
OF THE United States and a resident of Llewellyn Park, in the
County of Essex and State of New Jersey;

THAT HE VERILY BELIEVES HIMSELF TO BE THE ORIGINAL, FIRST AND SOLE INVENTOR
OF THE IMPROVEMENT IN STORAGE BATTERIES

DESCRIBED AND CLAIMED IN THE ANNEXED SPECIFICATION; THAT HE DOES NOT
KNOW AND DOES NOT BELIEVE THAT THE SAME WAS EVER KNOWN OR USED BEFORE
HIS INVENTION OR DISCOVERY THEREOF; OR PATENTED OR DESCRIBED IN ANY
PRINTED PUBLICATION IN THE UNITED STATES OF AMERICA OR ANY FOREIGN COUNTRY
BEFORE HIS INVENTION OR DISCOVERY THEREOF, OR MORE THAN TWO YEARS PRIOR
TO THIS APPLICATION; OR IN PUBLIC USE OR ON SALE IN THE UNITED STATES FOR
MORE THAN TWO YEARS PRIOR TO THIS APPLICATION, AND THAT NO APPLICATION
FOR FOREIGN PATENT HAS BEEN FILED BY HIM OR HIS LEGAL REPRESENTATIVES OR
ASSIGNS IN ANY FOREIGN COUNTRY.

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF

190

(SEAL)

NOTARY PUBLIC.

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183

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(1899-1910)*

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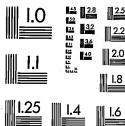
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